

19th INTERNATIONAL CONFERENCE ON COMPOSITE MATERIALS

JULY 28 TO AUGUST 2, 2013 Montreal, canada

Composite Materials: The Great Advance



CANADIAN ASSOCIATION FOR COMPOSITE STRUCTURES AND MATERIALS









19th International Conference on Composite Materials

Date: July 28 Sunday to August 2 Friday, 2013 Place: Palais des congrès,

Montréal, Canada

Host: Canadian Association for Composite Structures and Materials (CACSMA)

Composite Materials: The Great Advance

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WELCOME ADDRESS

Dear Colleagues,

On behalf of the organizing committee and all of those who have been involved in the preparation for the 19th International Conference on Composite Materials (ICCM19), we wish to welcome all participants of ICCM19. It is our great honor and pleasure to host ICCM19 in Montreal for the first time.

We expect about 1600 participants from around the world representing 47 countries. ICCM19 continues to succeed in the tradition of the ICCM as the biggest and the best conference in composite materials with the contribution of all the participants and the related societies from all over the world. Also it will offer the perfect opportunity to meet colleagues and make friends working in the exciting field of composites.

In ICCM19, the scientific program has been organized into multidisciplinary sessions for specialists in composite materials and its related fields. We have planned 8 plenary lectures and 10 key note lectures. For ICCM19, we have introduced a new format for the poster presentations. This allows the poster presenters more assured audience and more opportunities for presentation. There are about 230 oral sessions (about 1000 oral presentations) and 17 poster sessions (about 200 poster presentations). ICCM19 will provide every participant the best platform to discuss the cutting edge issues which arise from the broad areas of composite materials.

We wish to take this opportunity to thank all the sponsors, and supporters for their generous support for ICCM19. We would like to convey our sincere gratitude to the international members for their valuable support as well as to the members of the ICCM19 organizing committee for their tremendous efforts in making ICCM19 a success.

We wish all of you a fruitful meeting and we hope that you will benefit from the rich scientific discussions, and that your visit to Montreal will last as a pleasant memory.

Professor Suong Van Hoa, General Chair of ICCM19

Professor Pascal Hubert, Technical program chair of ICCM19

WELCOME ADDRESS

ICCM 19 in Montreal with its theme of Composite Materials: The Great Advance is ready to inspire all of us with a rewarding week of presentations, conversations and reflections as we greet old friends and make new ones. The premier tenet of ICCM is its commitment to bring together all facets of global academic, industrial and government scientists, engineers, faculty and students who dream beyond "possibilities" as they shape the advances in composites. Let this week serve as a catalyst for future collaborations and discoveries until we meet again in Copenhagen in 2015 at ICCM 20.

Professor Ozden Ochoa, PhD., P.E

President, ICCM

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Session	Developer	Affiliation	Country
Applications of Composites	Sayata Ghose	The Boeing Company	USA
Automated Composites Manufacturing	Suong V. Hoa	Concordia University	CANADA
Bio Composites	Minh-Tan Ton That	National Research Council	CANADA
Bio-based Composites	David Jesson	University of Surrey	UK
Bio-based Composites	Hans Lilholt	Technical University of Denmark	DENMARK
Biomedical Composites	Denni Kurniawan	Universiti Teknologi Malaysia	MALAYSIA
Carbon Nanocomposites	Bojan Boskovic	Cambridge Nanomaterials Technology Ltd	UK
Civil Engineering Applications	Guijun Xian	Harbin Intstitute of Technology Civil Engineering	CHINA
CNT Nanocomposites	Alan Lau	The Hong Kong Polytechnic University	CHINA
Composites for Automotive Applications	Martin Bureau	National Research Council	CANADA
	David Trudel-Boucher	National Research Council	CANADA
	Francis Martin	Canadian Space Agency	CANADA
Composites for Space Applications	Marie-Josee Potvin	Canadian Space Agency	CANADA
Composites for Space Applications	Wanping Zheng	Canadian Space Agency	CANADA
Composites in Civil Construction	Urs Meier	Materials Science and Technology	SWITZERLAND
	Simon Joncas	University of Quebec	CANADA
Composites in Wind Energy Technology	Rogier Pieter Nijssen	Knowledge Centre of Wind Turbine Materials & Constructions	NETHERLANDS
	Dimitrios Zarouchas	Knowledge Centre of Wind Turbine Materials & Constructions	NETHERLANDS

Composite Pressure Vessels and Piping	Pierre Mertiny	University of Alberta	CANADA
Damage & Failure	Chandra Veer Singh	University of Toronto	CANADA
	Stephen Hallett	University of Bristol	UK
Damage Modelling	Reza Vaziri	University of British Columbia	CANADA
Damage Tolerance and Impact	Richard Butler	University of Bath	UK
Deformation & Fracture	Constantinos Soutis	University of Sheffield	UK
Experimental Techniques	John Botsis	EPFL	SWITZERLAND
	Fin Caton-Rose	University of Bradford	UK
Experimental Techniques	Pete Hine	University of Leeds	UK
Failure Criteria	Abdul-Salam Kaddour	QinetiQ Group PLC	UK
Fatigue of Composites	Marino Quaresimin	University of Padova	ITALY
Flow & Heat Transfer Modeling	Suresh Advani	University of Delaware	USA
Forming of Advanced Composites and Engineering	Philip Harrison	University of Glasgow	UK
Green Composites	Tri Dung Ngo	National Research Council	CANADA
High Production Rate Technologies	António Torres Marques	MIT Portugal	PORTUGAL
Impact and Dynamic Responses	Serge Abrate	Southern Illinois University	USA
Impact Modeling or Penetration Modeling	Augustin Gakwaya	Laval University	CANADA
Impact Modeling or Penetration Modeling	Raj Das	The University of Auckland	NEW ZEALAND
Interfaces and Interphases	Vijay K Srivastava	Indian Institute of Technology, BHU	INDIA

	Kunigal Shivakumar	North Carolina A&T State University	USA
Interiaminar Keinforcements	Sandi G. Miller	NASA Glenn Research Center	USA
Interlaminar Reinforcements	Paul Robinson	Imperial College London	UK
Joints	Irene Fernandez	Delft University of Technology	NETHERLANDS
	Shahram Aivazzadeh	University of Burgundy	FRANCE
Joints	Jean Yves Cognard	ENSTA	FRANCE
	Mohd Nasir Tamin	Universiti Teknologi Malaysia	MALAYSIA
Liquid Composite Molding	Francois Trochu	Polytechnique Montreal	CANADA
Liquid Composite Molding	Edu Ruiz	Polytechnique Montreal	CANADA
Mechanics of Nanocomposites	Marino Quaresimin	University of Padova	ITALY
	Michele Zappalorto	University of Padova	ITALY
Metal Matrix Composites	Mahmoud Attia	National Research Council-Aerospace	CANADA
Metal Matrix Composites	Jason Lo	Natural Resources Canada	CANADA
Metal Matrix Composites	Sergei T. Mileiko	Russian Academy of Sciences	RUSSIA
Micormechanical Modeling	Igor Tsukrov	University of New Hampshire	USA
Micromechanics/Nanomechanics	Robert Young	University of Manchester School of Materials	UK
Modelling of Laminated Plates and Shells	Antonio J. M Ferreira	Universidade do Porto	PORTUGAL
Multi functional Compositor (Sumpositor)	B.L. Lee	Air Force Office of Scientific Research (AFOSR)	USA
muu-iunctionai Composites (Symposium)	James Thomas	US Naval Research Laboratory	USA

	Alex Kalamkarov	Dalhousie University	CANADA
Muiti-functional Smart Composites	Krishna Sri Challagulla	Laurentian University	CANADA
Multi-functional Nanocomposites	ShaoYun Fu	Chinese Academy of Sciences	CHINA
Nanocomposites	Tina Lekakou	University of Surrey	UK
Natural Eibra Compositos	Alan Lau	The Hong Kong Polytechnic University	CHINA
Natural Fibre Composites	Hao Wang	University of Southern Queensland	AUSTRALIA
	Yapa Rajapakse	Office of Naval Research	USA
Symposium on Marine Composites	Arun Shukla	University of Rhode Island	USA
	Yasushi Miyano	Kanazawa Institute of Technology	JAPAN
Physical Properties	Jens Schuster	University of Applied Sciences Kaiserslautern	GERMANY
Probabilistic Analysis, Reliability and Design	Marcin Kaminski	Technical University of Lodz	POLAND
Processing & Manufacturing Technologies	Abbas Milani	University of British Columbia	CANADA
	Arthur Jones	University of Nottingham	UK
Processing & Manufacturing Technologies	Reza Vaziri	University of British Columbia	CANADA
Processing & Manufacturing Technologies	Peter Middendorf	Universität Stuttgart	GERMANY
	Peter Mitschang	Institut für Verbundwerkstoffe GmbH	GERMANY
Processing & Manufacturing Technologies	Ralf Schledjewski	University of Leoben	AUSTRIA
Stability of Thin Walled Structures	Haim Abramovich	Technion, Israel Institute of Technology	ISRAEL
Stimulus Responsive Polymer and Composites	Jinsong Leng	Harbin Institute of Technology	CHINA
(Symposium)	Andreas Lendlein	Helmholtz-Zentrum Geesthacht GmbH	GERMANY

Structural Health Monitoring	Alfredo Güemes	Universidad Politecnica Madrid	SPAIN
Structural Health Monitoring	Ahmed Maslouhi	University of Sherbrooke	CANADA
Structural Health Monitoring	Nobuo Takeda	University of Tokyo	JAPAN
	Emile Greenhalgh	Imperial College London	UK
Structural Power Materials	Leif Asp	Swerea SICOMP AB	SWEDEN
Structural Response and Design	Zhongwei Guan	University of Liverpool	UK
Structural Response and Design	Paul Weaver	University of Bristol	UK
	Michael William Hyer	Virginia Polytechnic Institute and State University	USA
Structural Response and Design	Marie-Laure Dano	University of Laval	CANADA
Structural Response and Design	Husham Almansour	National Research Council Canada	CANADA
Sustainable Compositor	Manjusri Misra	University of Guelph	CANADA
Sustainable Composites	Amar Mohanty	University of Guelph	CANADA
Textile Composites	Prasad Potluri	University of Manchester School of Materials	UK
Textile Composites	Alistair McIlhagger	University of Ulster	UK
Textile Technology for Composites	Hiroyuki Hamada	Kyoto Institute of Technology	JAPAN
Thermoplastic Composite Materials	Alfonso Maffezzoli	University of Salento	ITALY
Tribology of Polymer Composites	Klaus Friedrich	Technical University of Kaiserslautern	GERMANY
Weight Reduction Strategy	Stephen W. Tsai	Stanford University	USA

LOCAL ORGANIZING COMMITTEE

ICCM19 Secretariat:

Lisa Ursaki (CACSMA, Concordia University) Heng Wang (Concordia University) Meghan McCullough (Concordia University) Larry Lessard (McGill University) Karine Requena (Quebec Materials Network) Sylvie Lamontagne (Quebec Materials Network)

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VOLUNTEERS

Iosif Daniel Rosca (Leader)	Concordia University	Jeremie Sauve	ETS
Song Chong Hui	Concordia University	Jeffica Hannesto	McGill University
Hamidreza Yazdani	Concordia University	Soroush Asgarinia	McGill University
Jeffrey Fortin- Simpson	Concordia University	Katherine Hay	McGill University
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Ali Naghashpour	Concordia University	Mohammad Hossein Sherafat	McGill University
Hoang Minh Duc	Concordia University	Adam William Smith	McGill University
Hossein Ghayoor	Concordia University	Lucie Riffard	McGill University
Rajan Desai	Concordia University	Mostafa Yourdkhani	McGill University
Canhui Zhang	Concordia University	Linus Lehnert	McGill University
Clementine Fellah	Ecole Polytechnique	Kobye Bodjona	McGill University
Alvaro Geovany Ramirez Uribe	Ecole Polytechnique	Kavish Bujun	McGill University
Somayeh Hosseini Rad	Ecole Polytechnique	Josef Freundorfer	McGill University
Claire Kapusta	John Abbott College	Alexander Steinbrenner	McGill University
Mathilde Jean St. Laurent	Laval University	Gabrielle Hubert	College Spinte-Marcelline

VENUE FLOOR PLAN



EXHIBITION



Venue	Exhibition Hall 516 c d e
Exhibition Schedule	
- Setup	Sunday, July 28 th 2:00pm – 6:00pm
- Exhibition Hours	Monday, July 29 th 7:00am – 5:00pm Tuesday, July 30 th 7:30am – 5:00pm Wednesday, July 31 st 7:30am – 5:00pm Thursday, August 1 st 7:30am – 3:30pm Friday, August 2 nd 7:30am – 12:30pm
- Dismantling	Friday, August 2 nd from 12:30pm
- Booth	8' high background and 3' high side dividers in black drape Inclusions: power, wi-fi, identification sign, 1 table with black skirt, 2 chairs

Name of Exhibitors	Booth #
Assembly Guidance Systems Inc, USA	12
Chinese Society of Composite Materials, China	1
Chomarat North America, USA	7
Composites Atlantic Limited, Canada	14
Composites Research Network, Canada	6
Concordia University / Centre for Composites, Canada	8
CREPEC (Centre de recherche sur les systèmes polymères et composites à haute performance), Canada	5
ERFT Composites (Engineering and Flow Technology for Composites), Canada	3
Instron, USA	2
Melbourne Convention Center, Australia	4
Metravib, France	15
Netzsch Instruments North America, LLC, USA	13

» REGISTRATION

Registration desks will be open on July 28 till August 2, 2013, on the fifth floor

July 28 (Sun): July 29 (Mon) –August 1 (Thurs): August 2 (Fri): 16:00 - 18:00 07:30 -18:30 07:30 - 12:30

» REGISTRATION FEE

Category	On-site Registration
Member	CAD \$850
Non-Member	CAD \$900
Student	CAD \$450
Accompanying Person	CAD \$300
Banquet	CAD \$100



*All above fees are quoted in Canadian currency.

* All above fees include all applicable taxes (Goods Services Tax "GST" and Quebec Sales Tax "QST").

* All above fees (excluding for Accompanying Person) include a Program Booklet and copy of e- proceedings.

» NAME BADGE

All participants, accompanying persons and exhibitors must wear their name badges to access the conference. You will be given a name badge when you register at the registration desk. If your badge needs correction, please visit the registration desk for a replacement.

» CERTIFICATE OF ATTENDANCE & OFFICIAL RECEIPT

A certificate of attendance for participants and an official receipt for paid registration will be provided onsite at the registration desk during the conference.

» CONFERENCE PAPERS

The program book will contain a summary of each paper of about 50 words. Full papers are included in the proceeding USB. Due to the requests of a few authors, some papers only presented abstracts in the proceeding USB.

» INTERNET

During the period of the conference, standard internet access is available within the conference facilities (5th and 7th floor of the Palais des Congres. The wi-fi password is **iccm192013**

» PRESENTATION FILE SUBMISSION

All presenters are requested to directly submit their final presentation file to the designated session room at least 1 hour before their session. IBM computers with Windows Microsoft Office 2010 (English version) will be provided. It is possible for presenters to check their presentation file in the preview room (Room #523 a b). However the presentation files should be directly entered to the computer in each of the session rooms. The use of a McIntosh computer may result in technical problems. Therefore please visit the preview room in advance to check the system to avoid last minute problems.

Preview room operation time: July 28 (Sun): 16:00-18:00 || July 29 (Mon) – Aug 1 (Thur) 07:30 -18:30 || Aug 2 (Fri) 07:30-12:30

» POSTER PRESENTATION

Four-minute oral, room 516 a/b

The poster presentations will be made in sessions in parallel with the oral presentations. Each poster session will have the same time slot of about 80 minutes as other oral sessions. Each poster session will have about 12 posters displayed on poster boards in a room. There will be a chair and co-chair of each session. Presenters at the poster sessions are asked to mount their posters on poster boards about 10 minutes before the beginning of the session. The presenter of each poster will have 4 minutes for oral presentation. After all 12 posters have been presented in series ($4 \times 12 = 48$ minutes), there will be 22 minutes available for further discussion between the presenters and the other participants. The 10 minutes remaining would be dedicated for the removal of the posters of the current session and the installation of the posters for the next session.

» LUNCH

Lunch will be provided on Monday, Tuesday, Wednesday and Thursday. A vegetarian option is available upon request in advance.

» BANQUET

For those who purchase a banquet ticket, it is included with the name badge. The banquet is a good time to network with other participants. There will be a circus performance by Montreal artists. There will also be a band who will play musical instruments made out of composite materials, by students and professor at a Montreal university.

» COFFEE BREAK

Coffee will be served in 517 Common Room during the designated time indicated on the program.

» INFORMATION DESK & TOURISM MONTREAL KIOSK (517 Foyer)

General information about the conference will be available at the information desk located close to the registration area during the conference period. Also a representative from Tourism Montreal will be available (Monday - Thursday) on the 5th floor to provide information about tourism in Montreal and Quebec.

» CONFERENCE SECRETATIAT (Room #521 a b)

- Before /after the conference: Tel. 514 848 2424 ext. 7997 at the Concordia University(1515 St Catherine West, EV3.418), see symbol (S) in the map below.
- During the conference: Tel. 514-789-3410, Room 521 a b or email iccm@iccm19.org at the Palais des Congres.

Conference Center (CC): Palais des congres Montreal, 1001 Place Jean-Paul-Riopelle, Montréal (Québec) H2Z 1H2, Canada

» Weather in Montreal

In July – August, the average temperature is around 28 °C . The dress code is semi-formal.

» Hotel Map

- Hyatt Regency (A)
- Hilton Bonaventure (B)
- Sheraton le Centre (C)
- Fairmont The Queen Elizabeth (D)
- Le Westin Montreal (E)
- Hotel Place d'Armes (F)
- Intercontinental (G)
- Sofitel Montreal Golden Mile (H)
- Le Crystal Hotel (I)
- Holiday Inn Select Montreal Centre Ville (J)
- Holiday Inn Midtown (K)
- Delta Centre Ville (L)
- W Montreal Hotel(M)
- Le Nouvel Hotel (N)
- Novotel Hotel (O)
- Dauphin Montreal Downtown (P)
- Travelodge Hotel (Q)
- McGill University-New Residence Hall & Royal Victoria College (R)



» TRANSPORTATION: AIRPORT - DOWNTOWN MONTREAL

Transportation between Pierre Elliott Trudeau airport and downtown Montreal can be done in many ways:

- Taxi: Taxi has a flat rate of CAD \$40.00 from the airport to downtown + tip. Taxi stand at the airport is outside the arrival area. From downtown, you just stand on the street and wave at a taxi coming by. Most major hotels have taxis waiting outside.
- Shuttle 747: The shuttle has a flat fare of \$9 from the airport to downtown for unlimited travel throughout STM bus and métro networks during 24 consecutive hours. It runs 24 hours a day and 7 days a week, at intervals of 10-20 minutes. Ticket can be brought at the fare vending machine at international arrival area, or pay exact amount in coins when boarding. The shuttle stops at a few locations in the downtown area (see map). At the airport, it stands outside the arrival area.
- By car: If you want to rent a car, there are car rental kiosks at the arrival area at the airport. You can ask them for a map to go downtown.

» TRANSPORTATION: IN DOWNTOWN MONTREAL

These hotels are within walking distance to the Palais des Congres. A map of the city, along with metro map are shown. Metro regular tickets are CAD \$3 each. A day pass is CAD \$9. A weekly pass is CAD \$23.75 (valid on shuttle 747). For more information, please go to stm website http://beta.stm.info/en



PLENARY LECTURES

» All plenary lectures are at <u>Room 710 a b</u> (7F)

	July 29 Monday										
Time	Торіс	Presented by	Chairperson								
8:30 – 9:20	50 years of Advanced Composites Research and Innovation: A Canadian Perspective	Anoush Poursartip (University of British Columbia)	Suong V. Hoa (Concordia University)								
13:30 – 14:20	Hierarchical Biocomposites by Design	Markus J. Buehler (Massachussetts Institute of Technology)	Pascal Hubert (McGill University)								
July 30 Tuesday											
8:30 - 9:20	Vitrimers	Ludwik Leibler (Matière Molle et Chimie, ESPCI)	Tsu Wei Chou (University of Delaware)								
13:30 – 14:20	Fabrication and Evaluation of FRTP using in-situ polymerizable PA6 with AvRTM	Goichi Ben (Nihon University)	Takahira Aoki (University of Tokyo)								
July 31 Wednesday											
8:30 - 9:20	Virtual Testing of Composites: Opportunities and Challenges	Anthony Waas (University of Michigan)	Gregory Odegard (Michigan Technological University)								

PLENARY LECTURES

» All plenary lectures are at <u>Room 710 a b</u> (7F)

	August 1 Thursday											
Time	Торіс	Presented by	Chairperson									
8:30 – 9:20	How to make high performance structural composites multifunctional	Xiaosu YI (AVIC Composite Corporation Ltd)	Stephen Tsai (Stanford University)									
13:30 – 14:20	The challenge of predicting failure in composites	Michael Wisnom (University of Bristol)	Francois Trochu (Ecole Polytechnique Montreal)									
	August 2 Friday											
8:30 – 9:20	A review: Carbon Fiber Reinforced composites for automotive	Mohini Sain (University of Toronto)	Hiroyuki Hamada (Kyoto Institute of Technology)									

KEY NOTE LECTURES

	July 29 Monday											
Time	Торіс	Room	Chairperson									
9:30 – 10:10	Recent Advances in ONR composites research Yapa Rajapakse (Office of Naval Research)	710 a b	Arun Shukla (University of Rhode Island)									
11:10 – 11:50	Stimulus response polymer and multifunctional composites: challenges and prospects Jinsong Leng (Harbin Institute of Technology)	710 a b	Andrew Johnston (National Research Council Canada)									
14:30 – 15:10	How do carbon nanotube fibers gain their strength Tsu Wei Chou (University of Delaware)	710 a b	Frank Ko (University of British Columbia)									
	July 30 Tuesday											
9:30 – 10:10	Introduction of Society of Automotive Composites Japan -A new wave of composites for automobile industry H. Hamada Kyoto Institute of Technology and A. Nakai (Gifu University)	710 a b	Johanne Denault (National Research Council Canada)									
11:10 – 11:50	The world wide failure exercise- Strength prediction is not easy But we are getting there Mike J. Hinton (National Composites Center, UK)	710 a b	Reza Vaziri (University of British Columbia)									
14:30 – 15:10	From smart sensing to multifunctional materials: Are we ready for the challenges? Fu-Kuo Chang (Stanford University)	710 a b	Minoru Taya (University of Washington)									

KEY NOTE LECTURES

July 31 Wednesday										
Time	Торіс	Room	Chairperson							
9:30 – 10:10	Applications of composite technologies to aerospace systems in KARI Seung Jo Kim (Korea Aerospace Research Institute)	710 a b	Isabelle Paris (Bombardier Aerospace)							
13:30 - 14:10	Multifunctional composite materials for Bio-Inspired systems allowing autonomic response BL. Lee (Air Force Office for Scientific Research)	710 a b	Nancy Sottos (University of Illinois)							
	August 1 Thursda	Ŋ								
9:30 – 10:10	Fusion bonding of thermoplastic composites Ali Yousefpour (National Research Council Canada)	710 a b	Peter Mitschang (Institut fur Verdunwerkstoffe GMbH)							
14:30 - 15:10	Metal matrix composites Dale Carlson (GE)	710 a b	Jason Lo (CANMET)							

524ab 518ab 520f 516ab 515 519a 514 524c 522 520ad 519b 520C 525 520be 7:00 **OPENING CEREMONY** 8:20 8:30 PLENARY (Room 710) - Anoush Poursartip: "50 years of Advanced Composites Research and Innovation: A Canadian Perspective". 9:30 KEYNOTE: RECENT DVANCES IN ONR COMPOSITES RESEARCH Yapa D.s. FORMING OF STIMULUS MULTI-Rajapakse ADVANCED RESPONSIVE COMPOSITES FOR FRACTURE AND DURABILITY AND APPLICATIONS CARBON NANO-FUNCTIONAL MODELLING AND LCM 1-NATURAL FIRER GREEN COMPOSITES & ENGINEERING POLYMER & BIOMEDICAL DEFORMATION COMPOSITES COMPOSITES 1 COMPOSITES 1 DAMAGE 1 SIMULATION I SATURATION COMPOSITES 1 AGING 1 (POSTER) 10:10 COMPOSITES APPLICATIONS SYMPOSIUM 1 FABRICS 1 SYMPOSIUM I SYMPOSIUM ON MARINE COMPOSITES 1 BREAK 10:50 11:10 **KEYNOTE:** STIMULUS RESP.POLY. & MULTIFUNCTIONA L COMP.: CHALLENGES & FORMING OF PROSPECTS MULTI-SYMPOSIUM ON ADVANCED CARBON NANO-FUNCTIONAL FRACTURE AND MODELLING AND LCM 2 -NATURAL FIBER DURABILITY AND Jinsong Leng BIOMEDICAL CHARACTERIZA GREEN BIO & GREEN I COMPOSITES & MARINE COMPOSITES 2 COMPOSITES DAMAGE 2 SIMULATION II PERMEABILITY COMPOSITES 2 AGING 2 COMPOSITES TION 1 COMPOSITES 2 (POSTER) 11:50 COMPOSITES 2 ENGINEERING SYMPOSIUM 2 FABRICS 2 STIMULUS RESPONSIVE POLYMER & COMPOSITES SYMPOSIUM II LUNCH 12:30 13:30 PLENARY (Room 710) - Markus J. Buehler: "Hierarchical Biocomposites by Design". 14:30 KEYNOTE: HOW DO CARBON NANOTUBE FIBERS GAIN THEIR STRENGTH? FORMING OF MULTI-Tsu-wei Chou SYMPOSIUM ON ADVANCED FUNCTIONAL FRACTURE AND MODELLING AND LCM 3 -PROCESSING NATURAL FIBER STEPHEN TSAI CHARACTERIZA GREEN BIO & GREEN II MARINE COMPOSITES 3 COMPOSITES & BONDED JOINTS 1 BIOCOMPOSITES 1 COMPOSITES SIMULATION III COMPOSITES 3 AWARD COMPOSITES 3 (POSTER) DAMAGE 3 TION 2 15:10 ENGINEERING SYMPOSIUM 3 FABRICS 3 MULTI-FUNCTIONAL NANO-COMPOSITES 16:30 BREAK 16:50 FORMING OF MULTI-MULTI-SYMPOSIUM ON ADVANCED FUNCTIONAL FUNCTIONAL FRACTURE AND MODELLING AND LCM 4 - PROCESS NATURAL FIBER BIO-COMPOSITES CHARACTERIZATI GREEN **BIO & GREEN III** COMPOSITES & BONDED JOINTS 2 TSAI PANEL MARINE NANOCOMPOSITE **COMPOSITES 4** COMPOSITES DAMAGE 4 SIMULATION IV MODELING I COMPOSITES 4 2 ON 3 (POSTER) COMPOSITES 4 ENGINEERING SYMPOSIUM 4 s FABRICS 4 RECEPTION 19:00 End 22:00

*Please note that all Plenaries and Keynotes, including sessions directly following a Keynote, will be presented in room 710. Please see highlighted.

Tuesday - July 30

T louse hote t	515	519a	514	524ab	524c	522	518ab	520ad	519b	520c	525	520f	520be	516ab				
7:30																		
6:30			<u> </u>	T	1	PLENA	RY (Room 710) - Lu	idwik Leibler: " Viti	rimers".	1	1		1	<u> </u>				
9:30	CNT NANO- COMPOSITES	MULTI- - FUNCTIONAL 25 COMPOSITES SYMPOSIUM -	MULTI- FUNCTIONAL COMPOSITES SVMPOSIUM =	MULTI- FUNCTIONAL COMPOSITES SYMPOSIUM 5	MULTI- FUNCTIONAL COMPOSITES SYMPOSIUM 5	MULTI- FUNCTIONAL COMPOSITES SYMPOSIUM 5	SYMPOSIUM ON MARINE COMPOSITES 5	FRACTURE AND DAMAGE 5	TEXTILE COMPOSITES 1	MODELLING AND SIMULATION V	LCM 5 - PROCESS MODELING I	INTRODUCTION OF SOCIETY OF AUTOMOTIVE COMPOSITES JAPAN - A NEW WAVE OF COMPOSITES FOR AUTOMOBILE INDUSTRY Hiroyuki Hamada, Asami Nakai	FATIGUE OF COMPOSITES 1	MULIT- FUNCTIONAL SMART COMPOSITES I	STRUCTURAL RESPONSE & DESIGN		LIFE CYCLE ANALYSIS & RELIABILITY	TESTING (POSTER)
								NATURAL FIBER COMPOSITES 5										
10:50			1				BR	EAK	1	1				1				
11:10	CNT NANO-	MULTI- FUNCTIONAL	SYMPOSIUM ON MARINE	THE WORLD WIDE FAILURE EXERCISE- STRENGTH PREDICTION IS NOT EASY BUT WE ARE GETTING THERE Michael John Hinton, Sam Kaddour	TEXTILE	MODELLING AND	LCM 6 - PERMEABILITY	NATURAL FIBER	FATIGUE OF	MULIT- FUNCTIONAL	STRUCTURAL	MULTI-SCALE	BIO-INSPIRED	MECHANICAL PROPERTIES				
11:50	COMPOSITES COMPOSITES SYMPOSIUM 6	COMPOSITES 6	FRACTURE AND DAMAGE 6	COMPOSITES 2	SIMULATION VI	WORKSHOP	COMPOSITES 6	COMPOSITES 2	SMART COMPOSITES II	OPTIMIZATION 1	MODELING 1	COMPOSITES 1	(POSTER)					
12:30							LUI	NCH										
13:30				PL	ENARY (Room 710) - Goichi Ben: "Fab	rication and Evalua	ation of FRTP using	in-situ polymeriza	ble PA6 with AvRT	М".							
14:30	EXPERIMENTAL TECHNIQUES	FROM SMART SENSING TO MULTIFUNCTIONAL MATERIALS: ARE WE READY FOR THE CHALLENGES? Fu-kuo Chang	SYMPOSIUM ON MARINE COMPOSITES 7	FRACTURE AND DAMAGE 7	TEXTILE COMPOSITES 3	MODELLING AND SIMULATION VII	LCM 7- CHARACTERIZATI ON	NATURAL FIBER COMPOSITES 7	FATIGUE OF COMPOSITES 3	MULIT- FUNCTIONAL SMART COMPOSITES III	STRUCTURAL OPTIMIZATION 2	MULTI-SCALE MODELING 2		MODELING I (POSTER)				
		MULTI- FUNCTIONAL COMPOSITES SYMPOSIUM 7																
16:30					1		BR	EAK	1				1					
16:50	EFFECT OF RESIDUAL STRESSES FROM MANU- FACTURING ON PROPERTIES	MULTI- FUNCTIONAL COMPOSITES SYMPOSIUM 8	SYMPOSIUM ON MARINE COMPOSITES 8	FRACTURE AND DAMAGE 8	TEXTILE COMPOSITES 4	MODELLING AND SIMULATION VIII	OUT OF AUTOCLAVE MANU- FACTURING	NATURAL FIBER COMPOSITES 8	FATIGUE OF COMPOSITES 4	MULIT- FUNCTIONAL SMART COMPOSITES IV	STRUCTURAL HEALTH MONITORING	MULTI-SCALE MODELING 3		MODELING II (POSTER)				
18:30		ļ	ł	1	1	+	E	nd	Į	1	I		1	ł				

*Please note that all Plenaries and Keynotes, including sessions directly following a Keynote, will be presented in room 710. Please see highlighted.

Wednesday - July 31

i lease note u	515	519a	514	524ab	524c	522	518ab	520ad	519b	520c	525	520f	520be	516ab
7:30	00	0,94		0	0 1	Ū	0		0 /**	0	00	0	0	0
8:30					PLENARY (R	oom 710) - Anthony	Wass: "Virtual Tes	ting of Composites	: Opportunities an	d Challenges".				
9:30	CARBON MATRIX &	MULTI- FUNCTIONAL	APPLICATIONS OF COMPOSITE TECHNOLOGIES TO AEROSPACE SYSTEMS IN KARI Seung Jo Kim	FRACTURE AND	TEXTILE	MODELLING AND		AUTOMATED COMPOSITES	FATIGUE OF	HEALTH	IMPACT &	BISTABLE	MODELLING OF	PROCESSING
10:10	COMPOSITES COM SYMI	COMPOSITES SYMPOSIUM 9	ES M 9 APPLICATIONS 1	DAMAGE 9	9 COMPOSITES 5	SIMULATION IX	PROCESSING	MANU- FACTURING I	COMPOSITES 5	MONITORING 1	RESPONSES 1	LAMINATES	1	(POSTER)
10:50			-			-	BRI	EAK	-				-	
11:10	PHYSICAL PROPERTIES	MULTI- FUNCTIONAL COMPOSITES SYMPOSIUM 10	APPLICATIONS 2	FRACTURE AND DAMAGE 10	INTERLAMINAR REINFORCE- MENTS I	MICRO- MECHANICAL MODELING SYMPOSIUM I	PROCESSING II	AUTOMATED COMPOSITES MANU- FACTURING II	FATIGUE OF COMPOSITES 6	HEALTH MONITORING 2	IMPACT & DYNAMIC RESPONSES 2	INTERFACE 1	MODELLING OF PLATES & SHELLS 2	JOINING (POSTER)
12:30							LUN	КН						
13:30	MECHANICAL BEHAVIOR	MULTIFUNCTIONAL COMPOSITE MATERIALS FOR BIO- INSPIRED SYSTEMS ALLOWING ALTONOMIC RESPONSE B. Les Lee MULTI- FUNCTIONAL COMPOSITES SYMPOSIUM 11	- APPLICATIONS 3	FRACTURE AND DAMAGE 11	INTERLAMINAR REINFORCE- MENTS II	MICRO- MECHANICAL MODELING SYMPOSIUM II	PROCESSING III	AUTOMATED COMPOSITES MANU- FACTURING III	COMPOSITE STRUCTURES 1	DETECTION & DAMAGE 1	IMPACT & DYNAMIC RESPONSES 3	INTERFACE 2	COMPOSITES IN TURBINES, PIPES AND VESSELS 1	HEALTH MONITORING, MULTI- FUNCTIONAL AND NDE (POSTER)
14:50			-			-	BRI	EAK	-				-	
15:10	NANO- COMPOSITES I	MULTI- FUNCTIONAL COMPOSITES SYMPOSIUM 12 - OPEN DISCUSSION	APPLICATIONS 4	FRACTURE AND DAMAGE 12	PREFORMS 1	MICRO- MECHANICAL MODELING SYMPOSIUM III	PROCESSING IV	AUTOMATED COMPOSITES MANU- FACTURING IV	COMPOSITE STRUCTURES 2	DETECTION & DAMAGE 2	IMPACT & DYNAMIC RESPONSES 4	INTERFACE 3	APPLICTIONS - ENERGY	DAMAGE AND FRACTURE (POSTER)
16:30							GENERAL	ASSEMBLY						
18:30							Eı	nd						

*Please note that all Plenaries and Keynotes, including sessions directly following a Keynote, will be presented in room 710. Please see highlighted.

Thursday - August 1

T lease note	515	519a	514	524ab	524c	522	518ab	520ad	519b	520c	525	520f	520be	516ab
7:30						-								
8:30					PLENARY (Roo	m 710) - Xiaosu YI:	"How to make high	performance strue	ctural composites n	ultifunctional".				
9:30	NANO- COMPOSITES II	MULTI- FUNCTIONAL COMPOSITES	APPLICATIONS 5	FRACTURE AND DAMAGE 13	CERAMIC MATRIX COMPOSITES 1	MODELLING AND SIMULATION X	PROCESSING V	AUTOMATED COMPOSITES MANU-	METAL MATRIX COMPOSITES I	NON DESTRUCTIVE	IMPACT & DYNAMIC	INTERFACE 4	FUSION BONDING OF THERMO- PLASTIC COMPOSITES Ali Yousefpour	IMPACT FATIGUE AND DURABILITY
		SYMPOSIUM 13						FACTURING V		EVALUATION 1	RESPONSES 5		THERMO-PLASTIC COMPOSITES 1	
10:50		T	1	1	1	1	BRI	EAK	1	[1		1	
11:10	NANO- COMPOSITES III	MULTI- FUNCTIONAL COMPOSITES SYMPOSIUM 14	APPLICATIONS 6	FRACTURE AND DAMAGE 14	CERAMIC MATRIX COMPOSITES 2	MECHANICAL PROPERTIES 1	PROCESSING VI	AUTOMATED COMPOSITES MANU- FACTURING VI	METAL MATRIX COMPOSITES II	NON DESTRUCTIVE EVALUATION 2	IMPACT & DYNAMIC RESPONSES 6	INTERFACE 5	THERMO-PLASTIC COMPOSITES 2	NANO- COMPOSITES I (POSTER)
12:30	LUNCH													
13:30					PLENAR	XY (Room 710) - Mic	chael Wisnom: "The	challenge of predi	cting failure in com	posites".				
14:30	NANO- COMPOSITES IV	ENERGY DEVICES	APPLICATIONS 7	FRACTURE AND DAMAGE 15	CERAMIC MATRIX COMPOSITES 3	MECHANICAL PROPERTIES 2	PROCESSING VII	REPAIRS AND MACHINING	CHALLENGES OF APPLYING COMPOSITE MATERIALS TO THE NEXT GENERATION OF AEROEGKINES Dale Richard Carlson METAL MATRIX COMPOSITES III	NON DESTRUCTIVE EVALUATION 3	IMPACT & DYNAMIC RESPONSES 7	INTERFACE 6	THERMO-PLASTIC COMPOSITES 3	NANO- COMPOSITES II (POSTER)
16:30			1	1	T		BRI	CAK	T		1			
16:50	NANO- COMPOSITES V	ENERGY DEVICES 2	APPLICATIONS 8	FRACTURE AND DAMAGE 16	FRACTURE AND DAMAGE 18	MECHANICAL PROPERTIES 3	PROCESSING VIII	EXPERIMENTAL TECHNIQUES 1	METAL MATRIX COMPOSITES IV	MICRO- STRUCTURES	IMPACT & DYNAMIC RESPONSES 8	INTERFACE 7	THERMO-PLASTIC COMPOSITES 4	STIMULUS RESPONSIVE POLYMER & COMPOSITES & INTERFACES (POSTER)
18:00							COCKTAILS	(Cash Bar)						
19:00							BAN(UET						
00.00		End												

*Please note that all Plenaries and Keynotes, including sessions directly following a Keynote, will be presented in room 710. Please see highlighted.

Friday - August 2

*Please note that all Plenaries will be presented in room 710. Please see highlighted.

	515	519a	514	524ab	524c	522	518ab	520ad	519b	520c	525	520f	520be	516ab
7:30														
8:30					PLENARY (R	oom 710) - Mohini	Sain: A review: Ca	rbon Fiber Reinford	ed composites for	automotive".				
9:30		NANOCLAYS 1	APPLICATIONS 9	FRACTURE AND DAMAGE 17	FRACTURE AND DAMAGE 19	MECHANICAL PROPERTIES 4	JOINTS 1	EXPERIMENTAL TECHNIQUES 2	METAL MATRIX COMPOSITES V	COMPOSITE IN CIVIL INFRA- STRUCTURES 1	STRUCTURAL RESPONSE & DESIGN 1	INTERFACE 8	THERMO-PLASTIC COMPOSITES 5	CMC AND MMC (POSTER)
10:50			*				BR	EAK						
11:10 NA G	CARBON, ANOTUBES & GRAPHENES		APPLICATIONS 10				JOINTS 2	EXPERIMENTAL TECHNIQUES 3		COMPOSITE IN CIVIL INFRA- STRUCTURES 2	STRUCTURAL RESPONSE & DESIGN 2	INTERFACE 9		
12:50							E	nd						

	Room 515	Room 519a	Room 710	Room 524ab	Room 524c
7:00 8:20			OPENING CEREMONY		
8:30			of hitling childholdi		
	PLENAR	XY (Room 710) - Anoush Poursartip: "5	o years of Advanced Composites Rese	arch and Innovation: A Canadian Pers	pective". Chair: Suong Hoa
	CARBON NANOCOMPOSITES 1 Chair: Christopher Kingston	MULTIFUNCTIONAL COMPOSITES SYMPOSIUM 1 Chairs: B. Les Lee, Erik T. Thostenson	SYMPOSIUM ON MARINE COMPOSITES 1 Chairs: Yapa D.s. Rajapakse, Arun Shukla	FRACTURE AND DAMAGE 1 Chairs: Dineshkumar Harursampath Rajamohan Ganesan	FORMING OF ADVANCED COMPOSITES & ENGINEERING FABRICS 1 Chairs: Philip Harrison, Frank Ko
9:30	DEVELOPMENT OF SWCNT/AL2O3 COMPOSITES FOR BALLISTIC APPLICATIONS	A MATERIALS INFORMATICS APPROACH TOWARDS CREATING FUNCTIONALITY AT INTERFACES IN PMC	RECENT ADVANCES IN ONR COMPOSITES RESEARCH	INTERACTION BETWEEN METALLIC MICRO- FASTENERS AND CARBON-FIBRE COMPOSITE LAMINATES	INFLUENCE OF INTERPLY FRICTION ON THE FORMING OF STACKED UD PREPREG
	Shuqiong Lin(NRC), Benoit Simard(NRC), Dave Morphy (NRC), Mariusz Bielawski(NRC), Peter Au (NRC), Jason Lo(CANMET, NRC), Manon Bolduc(Gov. of Canada), Jingwen Guan(NRC)	John Kieffer(University of Michigan - Ann Arbor), Michael Aldridge(University of Michigan - Ann Arbor), Katherine Sebeck(University of Michigan - Ann Arbor), Chen Shao(University of Michigan - Ann Arbor)	Yapa D.s. Rajapakse (Office of Naval Research (ONR))	Philip N Parkes(University of Bath), Richard Butler(University of Bath)	Malin Akermo(Royal Institute of Technology), Ylva R Larberg(Royal Institute of Technology), Jens Sjolander(Royal Institute of Technology), Per Johan Hallander(Saab AB)
	Efforts were focused on using single walled carbon nanotubes (SWCNTs) as fillers for Al2O3 matrix to maximize the mechanical performance of the ceramic composite and minimize the mass loading of CNTs.	We employ a combined computational and experimental approach to elucidate the nature of interphases in epoxy-based polymer matrix composites and develop strategies to improve interface functionality	Presentation will provide an overview of research supported by the Solid Mechanics Program of ONR on mechanics of marine composites and composite sandwich structures.	A novel metal-composite joining technology is presented. Load transfer is analysed with both high and low fidelity finite element models.	The work includes forming simulations of hot drape forming of stacked UD prepreg. Influence of interply friction on forming behavior and wrinkle initiation is investigated.
9:50	MANUFACTURING OF COMPOSITE LAMINATES WITH PERFORATED CARBON NANOTUBE FOREST CORE	MODELING THE RESPONSE OF DUAL CROSS-LINKED NANOPARTICLE NETWORKS TO MECHANICHAL DEFORMATION		ADVANCED CRASH ABSORBERS STITCHED BY NATURAL FIBRES TO IMPROVE EFFECTIVE CRACK GROWTH RESISTANCE	HYPERELASTIC & HYPOELASTIC MODELS FOR THE MESOSCOPIC ANALYSES OF COMPOSITE REINFORCEMENT DEFORMATION DURING FORMING
	Sei jin Park(University of Michigan - Ann Arbor), Sameh H. Tawfick(Massachusetts Institute of Technology), Anna Christine Brieland-shoultz(University of Michigan - Ann Arbor), A. John Hart(II)uiversity of Michigan - Ann Arbor)	Anna C. Balazs(University of Pittsburgh), Balaji V. s. Iyer(University of Pittsburgh), Victor V. Yashin(University of Pittsburgh)		Hessam Ghasemnejad(Kingston University)	Philippe Boisse, Emmanuelle Vidal-sallé, Than Nguyen, Adrien Charmetant (Institut National des Sciences Appliquees de Lyon)
	This paper presents a manufacturing process for laminates with a nanocomposite interlayer comprising a micro-perforated carbon nanotube forest, optionally infiltrated with ceramic and/or polymer.	We developed a hybrid computational model for the response of a network of cross-linked polymer-grafted nanoparticles (PGNs)to an applied deformation.		In the present paper the effects of stitching on the energy absorption and crashworthy behaviour of composite box structures will be studied.	Hyperelastic and hypoelastic models for fibre bundles are proposed to compute, at mesocopic scale, the 3D geometry of the deformed woven cell of fabrics during a forming process.
10:10	ELECTRICAL RESPONSE OF GRAPHENE REINFORCED COMPOSITES UNDER STATIC AND DYNAMIC LOADING	VISCOELASTIC BEHAVIOR OF FUNCTIONAL GRADED COMPOSITES USING FINITE ELEMENT METHOD: EXPERIMENTAL AND NUMERICAL ASSESSMENT	CONSTITUTIVE MODELING OF POLYMERIC MATRIX UNDER MULTI-AXIAL STATIC AND DYNAMIC LOADING	FATIGUE DELAMINATION: A COMPARISON BETWEEN VIRTUAL CRACK CLOSURE AND COHESIVE ZONE SIMULATION TECHNIQUES	VALIDATION OF LOCAL STITCHING SIMULATION FOR STITCHED NCF PLY STACKS
	Nicholas Heeder, Arijit Bose, Arun Shukla, Indrani Chakraborty (U. of Rhode Island), Fei Guo, Michael Godfrin, Robert Hurt, Anubhav Tripathi (Brown U.)	Ya Wang(University of Michigan - Ann Arbor), Daniel J. Inman(University of Michigan - Ann Arbor)	Isaac M Daniel(Northwestern University), Brian Werner(Northwestern University)	Gregorio Giuliese, Alessandro Pirondi, Fabrizio Moroni (U. of Parma), Andrea Bernasconi, Azhar Jamil(Polytechnic Institute of Milan), Ali Nikbakh (U. of Bologna)	Sylvain Bel, Daniel Leutz, Roland Hinterhoelzl, Klaus Drechsler (Technische Universitat Munchen), Alexane Margossian, Uwe Beier (Eurocopter Deutschland GmbH)
	An experimental study has been performed to understand the electrical response of graphene - reinforced composites under static and dynamic loading.	This paper presents a finite element method (FEM) for damping modeling of a multilayer composite structure, with a viscoelastic core sandwiched between elastic layers including piezoelectric layers.	Characterize a matrix resin under multi-axial loading at different strain rates and develop a general three-dimensional elasto-viscoplastic model that incorporates rate effects.	A cohesive zone model and the Virtual Crack Closure Technique (VCCT) are applied to simulate fatigue delamination of mode I, mode II and mixed-mode I/II loaded, three-dimensional specimen geometries.	Handling loose Non-Crimp Fabrics (NCF) ply stacks can be improved by joining the plies together using a local stitching. However, the stitching influences the draping behavior of the ply stack.
10:30	ELECTRICALLY CONDUCITVE ADHESIVES FOR CFRP COMPOSITES BASED ON NICKEL NANOSTRANDS AND CARBON NANOTUBES	BIOINSPIRED NANOSTRUCTURED GLASS FIBRE SURFACE AND COMPOSITE INTERPHASE	STUDY OF FLUID-STRUCTURE INTERACTION ON COMPOSITE STRUCTURAL VIBRATION	DAMAGE BEHAVIOUR IN QUASI-ISOTROPIC CFRP LAMINATES WITH SMALL FIBRE ORIENTATION MISMATCH	EFFECT OF INTER-PLY SLIDING ON THE APPEARANCE OF DEFECTS FOR MULTILAYERED COMPOSITE SHAPING
	Iosif Daniel Rosca(Concordia University), Suong Hoa(Concordia University)	Shanglin Gao, Yin hu Deng, Jian wen Liu , Edith Maeder (Leibniz Institute of Polymer Research Dresden)	Young W Kwon(Naval Postgraduate School)	Hayato Nakatani(Osaka City University), Shinji Ogihara(Tokyo University of Science)	Samir Allaoui(Universite d'Orleans), Gilles Hivet(Universite d'Orleans), Christophe Cellard(Universite d'Orleans)
	We successfully formulated highly conductive structural adhesives based on nickel nanostrands and single wall carbon nanotubes for metal and CFRP substrates	We report the use of graphene nanoplatelets and carbon nanotubes in glass fibre surface coatings and in turn composite interphases for integrating both mechanical and electrical functionalities.	This paper studied the effect of FSI on the natural frequency, mode shape, and modal curvature of polymer composites. Experimental tests were conducted for specimens in air and water, respectively.	Difference in damage behavior in quasi-isotropic CFRP laminates with fibre orientation angle mismatch of conventional 45° and 15° under tensile or out-of-plane loading was experimentally evaluated.	This paper presents the results of an experimental study of the effect of inter-ply relative sliding on the appearance and amplification of defects for multilayered composite shaping.
10.20		•	BREAK		•

	Room 522	Room 518ab	Room 520ad	Room 519b	Room 520c
7:00			OPENING CEREMONY		
8:30					
	PLENAK	Y (Room 710) - Anoush Poursartip: "5	o years of Advanced Composites Rese	arch and Innovation: A Canadian Pers	pective". Chair: Suong Hoa
	MODELLING AND SIMULATION I Chairs: Fin Caton-Rose, Peter Hine	LCM 1 - SATURATION Chairs: Edu Ruiz, Suresh G. Advani	NATURAL FIBER COMPOSITES 1 Chairs: Hans Lilholt, Anh-Dung Ngo	DURABILITY AND AGING 1 Chairs: Martin Lévesque, Alan Plumtree	STIMULUS RESPONSIVE POLVMER & COMPOSITES SYMPOSIUM I Chair: Jinsong Leng
9:30	INDUSTRIAL APPLICATION OF FIBRE ORIENTATION PREDICTIONS	MODELING OF IN-PLANE VOID TRANSPORT DURING COMPOSITES PROCESSING	CARBON TEMPLATE FROM HEMP HURD POWDER	ENVIRONMENTAL DURABILITY OF KENAF FIBRE REINFORCED UNSATURATED POLYESTER COMPOSITE	WATER-INDUCED SHAPE MEMORY EFFECT OF EPOXY-BASED SHAPE MEMORY POLYMER
	Dave Brands(SABIC), Claire Martin(SABIC), Warden Schijve()	John Joseph Gangloff jr.(University of Delaware), Claire Daniel(Institut superieur de mecanique de Paris - SUPMECA), Suresh G Advani(University of Delaware)	Zili Yan(University of Southern Queensland), Tian Ma(), Jianchun Zhang(), Hua Zhang(People's Liberation Army), Hao Wang(University of Southern Queensland)	M. Liao Toshihiko HOJO, H. Hamada (Kyoto Inst. Tech.), Y. Yang, Z. Xu(Donghua U.), U. Semo Ishiaku (Ahmadu Bello U.), Z. arifin Mohd Ishak, G. Xian (Harbin Inst. Tech.)	Wenxin Wang(Harbin Institute of Technology), Haibao Lu(Harbin Institute of Technology), Yanju Liu(Harbin Institute of Technology), Jinsong Leng(Harbin Institute of Technology)
	Most weight reduction in PP-LGF Automotive parts is obtained if an-isotropic shrinkage and mechanical material behavior is included in the design process. Accurate fibre orientation prediction is key.	A model experiment has been developed where a flow cell is injected with a simulated resin and voids. The goal is to maximize the relative void velocity versus the resin for effective void migration.	Carbon templates of biomorphic silicon/silicon carbide ceramic were fabricated from hemp hard power with controllable density and narrow pore size distribution.	The results of this study revealed that environment temperature, moisture content have a significant influence on the kenaf mat reinforced UP composites during degradation process.	The novel epoxy-based SMP display good shape memory effect in response to water. This study advocates the design concept and presents some experimental results of the water-induced smart composite.
9:50	PROPERTY CALCULATION SYSTEM FOR INJECTION AND COMPRESSION MOLDING OF FIBER-FILLED POLYMER COMPOSITES	EXPERIMENTAL STUDY ON THE IDENTIFICATION OF SATURATION OF A POROUS MEDIA THROUGH THERMAL ANALYSIS	WHAT ARE THE POSSIBLE ORIGINS OF THE NONLINEAR TENSILE BEHAVIOUR OF HEMP FIBRES?	EXPERIMENTAL INVESTIGATION OF PHYSICAL AGING EFFECT ON THE MECHANICAL PROPERTIES OFA CARBON/POLYIMIDE BRAIDED COMPOSITE	SMART COMPOSITE SURFACE WITH IN-SITU TUNABLE ADHESION BEHAVIOR
	Xiaoshi S Jin(Autodesk, Inc.), Jin Wang(Autodesk, Inc.), Sejin Han(Autodesk, Inc.)	Maxime Villiere(U. de Nantes), Sébastien Gueroult, Joël Bréard (U. du Havre), Vincent Sobotka, Nicolas Boyard, Didier Delaunay (Centre Nat. de la recherche scientifique CNRS)	Vincent Placet(FEMTO-ST), Frederique Trivaudey(FEMTO- ST), Ousseynou Cisse(FEMTO-ST), M Lamine Boubakar(FEMTO-ST)	Simon Dulong(Ecole Polytechnique de Montreal), Martin Lévesque(Ecole Polytechnique de Montreal), Chun Li(National Research Council Canada), Aurelian Vadean(Ecole Polytechnique de Montreal)	Tae-hyung Kang(Seoul National University), Seok bin Hong(Seoul National University), Tae-jun Ko(Seoul National University), Kyu hwan Oh(Seoul National University), Woong- rweal Yu(Seoul National University)
	A fiber-filled polymer composite property calculation system for injection and compression molding simulations of fiber-filled polymer composites is presented with a few examples.	The aim of this study is to identify the saturation of a fibrous preform by a fluid through thermal analysis.	The aim of this work is to investigate the possible mechanisms responsible for the nonlinear beahviour of hemp fibres and to provide a discussion of state-of-the-art hypotheses.	This work aimed at acquiring knowledge about the thermo- mechanical behavior of a braided composite material for elevated temperature service conditions. Static and aging properties were studied.	We combine the two-way shape memory composite with the surface patterning method, finally fabricating a smart composite surface that can change its surface morphology and adhesion reversibly
10:10	REFINED MODELS ON THE WRINKLING OF SANDWICH PANELS UNDER BIAXIAL LOADING	VOID MINIMIZATION AND OPTIMIZATION OF INJECTION VELOCITY IN RTM PROCESSING	INFLUENCE OF FIBRE ARCHITECTURE ON IMPACT AND FATIGUE BEHAVIOUR OF FLAX FIBRE-BASED COMPOSITES	LONG-TERM EXPOSURE OF POLYCYANATE COMPOSITES TO HIGH TEMPERATURE ATMOSPHERE	THERMO-MECHANICAL PERFORMANCE AND FATIGUE CYCLING OF NOVEL BISMALEIMIDE- BASED SHAPE MEMORY POLYMER RESIN AND COMPOSITES
	Hsin-piao Chen(California State University, Long Beach), Hsun Chen(California State University, Long Beach)	Christophe Ravey, François Lebel, Edu Ruiz, Hubert Courteau- godmaire, François Trochu (Ecole Polytechnique de Montreal)	Farida/ Bensadoun, Delphine Depuydt, Joris Baets, Aart Willem Van vuure, Ignaas Verpoest (Katholieke Universiteit Leuven)	Yoshiyuki Kobayashi(Tokyo Metropolitan University), Satoshi Kobayashi(Tokyo Metropolitan University)	Gyaneshwar P. Tandon(University of Dayton), Thao T Gibson(University of Dayton), Richard Coomer(Southwestern Ohio Council for Higher Education), Jeff W Baur(Air Force Research Laboratoru)
	The facing wrinkling of composite sandwich panels have been investigated using two refined models. The deformation in core is decaying exponentially in both refined models.	The goal of this investigation is to find a way to predict the optimal injection velocity in order to reduce the void content in composite parts.	In this study, impact resistance and fatigue behaviour of flax fibre composites for various preform architectures will be investigated in order to assess the durability of the biocomposite material.	Compressive and tensile strength test of carbon fiber reinforced plastics with polycyanate were conducted in order to evaluate effects of long-term exposure to high temperature air.	Neat resin and unidirectional laminates were fabricated and their glassy, rubbery and shape memory behavior analyzed under multiple temperature/deformation cycles.
10:30	MULTI-DISCIPLINARY DESIGN OPTIMIZATION OF SANDWICH CONSTRUCTIONS	A MICROMECHANICS BASED MODEL OF RESIN FLOW IN FABRIC WITH CROSS-FLOW AND OVER- FLOW EFFECTS	A METHODOLOGY TO ASSESS THE MECHANICAL BEHAVIOR OF PLANT FIBERS - APPLICATION TO FLAX FIBER ROVINGS UNDER TENSILE LOADING	ANISOTROPIC ACID PENETRATION IN TRIANGULAR BAR REINFORCED EPOXY COMPOSITE	TRANSMISSION ELECTRON MICROSCOPY CHARACTERIZATION OF EFFECT OF GRAPHITE IN ZRB2-BASED COMPOSITES
	Liliane Gilberte Ngahane Nana, Jörg Feldhusen, Stephanie Dallmeier, Benedikt Günther, Thomas Fieder (Rheinisch Westfalische Technische Hochschule Aachen)	D. Roy mahapatra	Antoine Barbulée (ENSICAEN/UCBN/CNRS), Joël Bréard (Université du Havre / CNRS), Jean-Paul Jernot (ENSICAEN/UCBN/CNRS), Moussa Gomina (FNSICAEN/UCBN/CNRS)	Bryan Buning Pajarito(University of the Philippines Diliman), Masatoshi Kubouchi(Tokyo Institute of Technology)	Liyuan Qin, Songhe Meng, Weihua Xie, Hua Jin, Chenghai Xu (Harbin Institute of Technology)
	Sandwich constructions have the major advantage of being lightweight. In addition to that, economic and technical requirements are vital for the potential use of sandwich constructions.	A micromechanics model is developed for RTM process considering, chage in pore size, over-flow, cross-flow, and race tracking in context of Darcy's law.	In this work we investigate the tensile behavior of flax fiber rovings. The usual methods applied to synthetic fibers are indeed unsuitable for plant fibers such as flax.	This work investigated acid penetration in amine-cured epoxy composites reinforced with aligned triangular bars. Acid penetration was found to be fast from the sloped than from flat side of specimen.	The purpose of this paper is to report the investigation on the microstructure of ZEB2–based ceramic by TEM, and analyze the effect of the graphite flake.
10:50			BREAK		

	Room 525	Room 520f	Room 520be		Room 516ab				
7:00	7:00								
8:20			OPENING CEREMON I						
0.30	PLENARY (Room 710) - Anoush Poursartip: "50 years of Advanced Composites Research and Innovation: A Canadian Perspective".								
	COMPOSITES FOR BIOMEDICAL DEFORMATION GREEN COMPOSITES 1				APPLICATIONS - POSTER				
	APPLICATIONS Chairs: Ifty Ahmed, François Barthelat	Chair: Anthony M Waas	Chairs: Asami Nakai, Amar Mohanty		Chairs: Farjad Shadmehri, Gilbert Lebrun				
9:30	PREPARATION AND CHARACTERIZATION OF MWCNTS/PVA COMPOSITE HYDROGELS WITH HIGH MECHANICAL AND ELECTROCHEMICAL PROPERTY FOR FIOMEDICAL APPLICATION	FATIGUE LIFE ASSESSMENT OF INJECTION- MOLDED REINFORCED SHORT FIBRE THERMOPLASTICS: NOTCH EFFECTS	MULTIVARIABLE OPTIMISATION OF FIBRE REINFORCED HONEYCOMB SANDWICH PANELS	9:30	MECHANICAL CHARACTERIZATION OF NONWOVEN COMPOSITES WITH PET HOLLOW FIBERS AND ELASTOMERIC FIBERS FOR CUSHION MATERIALS Ki young Kim, Hyo jin An, Dae young Lim, Woo lee Park				
	Yudong Zheng, Kun Qiao, Wei Li, Lingling Ren, Yanyi Huang (Beijing University of Science and Technology)	Carole Nadot-martin, Sylvie Castagnet, Yves Nadot (Institut Pprime CNRS ISAE-ENSMA), Andrea Bernasconi, Edoardo Conrado(Polytechnic Institute of Milan)	Sanjeev Rao(Centre for Advanced Composite Materials), Jeremy Chen(University of Auckland), Debes Bhattacharyya(University of Auckland)	9:34	COST-SAVING POTENTIALS FOR CFRP PARTS IN EARLY DESIGN STAGES Konstantin Horejsi, Johannes Noisternig, Olaf Koch, Ralf Schledjewski SHAPE-ADAPTITYE COMPOSITE MADENE PROPERT (PSS – ANALYSIS AND OPTIMIZATION				
	Biocompatible MWCNT/PVA composite hydrogels possess the enhanced mechanical properties and wear resistance, in	A Through Process Modelling is enhanced to account for the influence of stress gradients on the fatigue life of injected	In this paper, failure maps have been constructed for various relative densities of the core. The optimum weight and hence	9:38	Manuha Thiyunuwan Herath, Sundararajan Natarajan, B. gangadhara Prusty, Nigel St. john				
	combination with exellent electrical conductivity and electrochemical activity.	notched samples. Results are compared to a large experimental database	the cost of the sandwich beam was obtained after four parameter optimisation. EFFECT OF FLAX FIBRES INDIVIDUALISATION ON TENSILE FAILURE OF FLAX/EPOXY UNDIRECTIONAL COMPOSITE	9:42	PREPARATION AND THERMAL CHARACTERISTICS OF MORTAR CONTAINING HEXADECANE/XGNP SSPCM				
	MICRO-PULLWINDING - AN AUTOMATED	EXPEDIMENTAL VEDIFICATION OF SPDINGRACK			Sughwan Kim, Jungki Seo, Okyoung Chung, Sumin Kim THE APPLICATION OF MEDIUM TEMPERATURE CURED WITH HIGH CLASS TRANSITION TEMPERATURE				
9:50	PRODUCTION TECHNOLOGY FOR MEDICAL DEVICES	PHENOMENON ANALYSIS BY FBG SENSORS AND IMAGE PROCESSING METHODS IN C/PPS		9:46	RESIN SYSTEM ON BICYCLE RIMS Paichi Chan P				
	Christian Brecher, Michael Emonts, Alexander Brack, Markus	Zdenek Padovec, Hynek Chlup, Milan Dvorak, Milan Ruzicka	Guillaume Coroller(Universite de Bretagne Sud)	9:50	DESIGN, MANUFACTURING AND TESTING OF A SMALL-SCALE COMPOSITE MORPHING WING				
	Eckert (Fraunnoier Institute for Production Technology)	(Czech Technical University of Prague)			Francois Michaud, Simon Joncas, Ruxandra Botez				
	This paper shows the development of a micro-pullwinding technology for the manufacturing of medical devices, which allows the precise adjustment of the mechanical properties independent of each other. NEW COMPOSITES BASED ON BACTERIAL CELLULOSE AND PHAS FOR TISSUE ENGINEERING APPLICATIONS	Presented paper deals with comparison of analytical solution of the springback angle with two experimental methods - measurement with FBG sensors and image processing. CHARACTERISATION OF INELASTIC PROCESSES IN CF TEXTILE REINFORCEMENTS	The paper presents the effect of the mechanical properties and the individualization of flax fibers on the tensile properties of unidirectional composites EFFECTS OF PRESS MOLDING CONDITIONS ON IMPREGNATION AND MECHANICAL PROPERTIES OF CARBON FIBER FABRIC/PA6 FILM COMPOSITE	9:54	DEGRADATION SMC UNDER HOT WATER IMMERSION He Luan Ferrana Khan Kotaten Hamano Yang Yugin Yining Gin Himunki Hamada				
				9:58 10:02	SAHPE-MEMORY COMPOSITE ACTUATOR WITH SMA AND SMP				
					Hisaaki Tobushi, Kohei Takeda, Ryosuke Matsui, Syunichi Hayashi				
					EVALUATION OF THERMAL CYCLING INFLUENCE ON PEI/CARBON FIBER COMPOSITES WITH AEROSPACE APPLICATION				
10.10					Natassia Lona Batista, Edson Cocchieri Botelho, Koshun Iha				
				10:06	THERMOELECTRIC PROPERTIES OF NI/TIO2-X COMPOSITES				
	Paul Octavian Stanescu, Catalin Zaharia, Veronica Fratila,,	Magdalena Szpieg(Swerea SICOMP), Maciej Wysocki(Swerea	Ousuke Ishida, Hiroshi Saito, Kiyoshi Uzawa, Isao Kimpara		Yun Lu, Katsuhiro Sagara, Yusuke Matsuda, Liang Hao, Hiroyuki Yashida, Jinxiang Chen				
	Eugeniu Vasile(University Politehnica of Bucharest) Bianca Galateanu (University of Bucharest)	SICOMP)	(Kanazawa Institute of Technology) Mitsugu Kimizu, Wataru Okumura (Industrial Research Institute of Ishikawa)	10:10	REINFORCING AND COMPATIBILIZING EFFECT OF NANO SIZE MONTMORILLONITE ON HIGH DENSITY POLYETHYLENE-POLYAMIDE6 COMPOSITES				
	This work is focused on the synthesis and characterization of	This contribution concerns the development of intrinsic	The press molding conditions of carbon fiber fabric /polyamide6		Hajnalka Hargitai				
	scaffolds for tissue engineering applications	carbon fibre textile preforms when subjected to compression	molding temperature for the economic manufacturing process.	10:14	MECHANICAL PROPERTIES OF THICK COMPOSITE PIPES REINFORCED WITH MULTILAYER BRAID				
	0 0 11 million	and shear.			Yusuke Shimizu, Asami Nakai, Akio Ohtani, Uozumi Tadashi, Kinzo Hashimoto				
	THERMO-MECHANICAL CHARACTERIZATION OF	EXPEDIMENTAL INVESTIGATION OF THE	FLABORATION AND CHARACTERIZATION OF						
10:30	NANO-HYDROXYAPATITE AND CELLULOSE REINFORCED POLY(LACTIC ACID) COMPOSITES WITH DROSPECTIVE ADDI LCATIONS FOD ROME	EXTENSION/TWIST COUPLING IN ROTATING COMPOSITE LAMINATES	BIOCOMPOSITES FROM RICE HUSK, WHEAT HUSK AND PLA						
	Arman Mahoubi soufiani, Masoud Salehi, Mikael Skrifvars (University College of Boras), Sung-woo Cho (Royal Institute of Technology)	Damien Reveillon(FEMTO-ST), Vincent Placet(FEMTO-ST), Stani Carbillet(FEMTO-ST), Emmanuel Foltete(FEMTO-ST), Patrick Sandoz(Universite de Franche-Comte)	Thao Tran(Ecole des Mines d'Alès), Jean-charles Benezet(Ecole Nationale Superieure des Mines d'Ales), Anne Bergeret(Ecole des Mines d'Alès)						
	Evaluation of thermal, mechanical and viscoelastic properties of combinatorial thin composite films of PLA, n-HAp and two types of regenerated cellulose, applicable in bone tissue engineering.	Optical and extensometric measurements have been used to study the extension/twist coupling behaviour of a laminated plate subjected to a rotating field.	The objective of this study was to investigate the possibility that rice husk and wheat husk can be used as fillers in biocomposite systems.						
10.20			BREAK						
10.00									

	Room 515	Room 519a	Room 514	Room 524ab	Room 524c		
10:50			BREAK				
	CARBON NANOCOMPOSITES 2 Chair: Christopher Kingston	MULTIFUNCTIONAL COMPOSITES SYMPOSIUM 2 Chairs: Chris Lynch, John Kieffer	SYMPOSIUM ON MARINE COMPOSITES 2 Chairs: C.t. Sun, Michelle Stephanie Hoo Fatt	FRACTURE AND DAMAGE 2 Chairs: Dineshkumar Harursampath Rajamohan Ganesan	FORMING OF ADVANCED COMPOSITES & ENGINEERING FABRICS 2 Chairs: Philip Harrison, Frank Ko		
11:10	MECHANICAL PROPERTIES OF MULTI-WALLED CARBON NANOTUBE BUCKYPAPER BY POLYVINYLPYRROLIDONE ADHESIVES	COMPLIANT MULTIFUNCTIONAL WING STRUCTURES FOR HARVESTING SOLAR ENERGY	UNDERWATER RESPONSE OF COMPOSITE PANELS SUBJECTED TO NEAR-FIELD BLAST LOADING	NOVEL COMPOSITE-COMPOSITE JOINING TECHNOLOGY WITH THROUGH THICKNESS REINFORCEMENT FOR ENHANCED DAMAGE TOLERANCE	FORMING PARTS WITH ALIGNED MULTI WALL CARBON NANOTUBES		
	Qianli Liu, Min Li, Jing Guo, Yizhuo Gu(Beihang University), Yanxia Li, Zuoguang Zhang (Beijing University of Aeronautics and Astronautics)	Hugh Alan Bruck(University of Maryland at College Park)	Arun Shukla(University of Rhode Island), Frank Livolsi(University of Rhode Island), Daniel Gracia(University of Rhode Island), James Leblanc(Naval Undersea Warfare Center)	Steffen Stelzer(Montanuniversitat Leoben), Stephan Ucsnik(Austrian Institute of Technology), Jürgen Tauchner(FACC AG), Thomas Unger(Montanuniversitat Leoben), Gerald Pinter(Montanuniversitat Leoben)	Per Johan Hallander(Saab AB)		
	PVP was used as dispersant during the dispersion process for preparing MWNT backypaper to enhance its mechanical properties.In addition, three kinds of functionalized MWNT buckypapers were fabricated.	New experimental and analytical principles for guiding multifunctional design of compliant wing structures with solar cells for MAVs are developed. Effects of front spar compliance are analyzed.	Experimental studies were performed to understand the Underwater Explosive [UNDEX] response of composite panels when exposed to near-field explosive loading in different environments.	A novel bonding technology that aims at combining form-fit and adhesive bonding with an integrative joint approach is presented in this paper.	The aim of this work is to investigate influence of a composite manufacturing process on aligned MWCNTs. The study showed shear induced slip lines in all areas experiencing shear.		
11:30	ENHANCED CARBON NANOTUBE FIBER AND FILM BY A HIGH TOUGHNESS EPOXY	SMP FILLED HONEYCOMB AS A RECONFIGURABLE SKIN: MODEL AND EXPERIMENTAL VALIDATION	BLAST PARAMETER EFFECTS IN FULL SCALE AIR BLAST ON SANDWICH COMPOSITE PANELS	COUPLING OF PLANAR GROWTH AND MATRIX CRACKING IN MODE III DELAMINATION TOUGHNESS TESTING	EVALUATION OF DAMAGE DEVELOPMENT OF NON- CRIMP FABRIC COMPOSITES WITH A CIRCULAR HOLE BASED ON MULTI-SCALE ANALYSIS		
	Yanan Liu, Yizhuo Gu, Min Li (Beihang University), Kun Wang, Zuoguang Zhang (Beijing U. Aeronautics and Astronautics), Dongmei Hu, Qingwen Li (Chinese Academy of Sciences).	Richard V Beblo, John P Puttmann(University of Dayton), Nathanial E Deleon, James J Joo, Gregory W Reich (Air Force Research Laboratory)	John Philip Dear(Imperial College of Science)	Allison Lynne Johnston(Syracuse University), Barry D Davidson(Syracuse University)	Tetsusei Kurashiki(Osaka University), Yoshitaka Matsushima(Osaka University), Yuki Nakayasu(Osaka University), Masaru Zako(Osaka University)		
	The tensile strength and modulus of CNT fiber and CNT film were efficiently improved by introducing a high toughness epoxy resin. The mechanism of the improvement was also analyzed.	To aid in the design and optimization of a reconfigurable skin, an analytical model predicting the mechanical response of an SMP filled honeycomb is presented with experimental validation.	Research has been performed into blast testing of glass fiber reinforced polymer (GFRP) fram sandvich composites in air situations. Modelling has also been performed .	This work determines the reason for the observed dependence of apparent mode III toughness on delamination length for a split- shear torsion test, and generalizes the results for other mode III tests.	Damage development of NCF composites with a circular hole was estimated by mesh superposition method. The stiffness reduction has same tendency with the numerical and experimental results.		
11:50	INTERFACIAL STRESS TRANSFER IN GRAPHENE OXIDE NANOCOMPOSITES	ADAPTIVE COMPOSITE PANEL WITH EMBEDDED SMA ACTUATORS: DESIGN, MANUFACTURING AND TESTING	SNAP-THROUGH INSTABILITY, DELAMINATION AND DAMAGE PROGRESSION IN AIR AND WATER BACKED CURVED SANDWICH STRUCTURES	ANALYTICAL AND FINITE ELEMENT ANALYSES ON RELIABILITY OF CARBON FIBRE REINFORCED PLASTICS	A SIMULATION APPROACH FOR TEXTILE COMPOSITE REINFORCEMENTS		
	Zheling Li(University of Manchester), Robert Young(University of Manchester), Ian A. Kinloch(University of Manchester)	Simon Lacasse(Ecole de Technologie Superieure), Charles Simoneau(Ecole de Technologie Superieure), Patrick Terriault(Ecole de Technologie Superieure), Vladimir Brailowski(Fcole de Technologie Superieure)	Romesh Batra(Virginia Polytechnic Institute and State University (Virginia Tech)), Jian Xiao(University of Michigan - Ann Arbor)	Heng-yi Chou, Sébastien Joannès, Anthony R. Bunsell, Alain Thionnet (Ecole Nationale Superieure des Mines de Paris)	Thomas Gereke, Oliver Doebrich, Matthias Huebner, Chokri Cherif (Technische Universitat Dresden)		
	Raman D band downshifted as the interfacial stress transfer in GO/PVA nanocomposites. And the alignment of GO layers in the composites has been characterized by polarized Raman spectroscopy.	This work aims at developing models and manufacturing technology applicable to adaptive panels actuated by active SMA elements embedded into a passive composite laminate host structure.	We use coupled boundary element method (BEM) and the finite element method (FEM) to analyze transient plane strain deformations of a curved sandwich structure exposed to a shock wave.	Lifetime prediction is a key challenge for composite materials. A FE model and AE technique led us to an intrinsic safety factor below which the material would be unreliable for long term use.	A macroscopic material model for finite element simulations of textile forming processes is introduced that reflects the specific material behavior of textiles and their nonlinear character.		
12:10	STUDY ON MECHANICAL PROPERTIES OF MODIFIED GRAPHENE/EPOXY NANOCOMPOSITES	FROM ATTACHED SMA WIRES TO INTEGRATED ACTIVE ELEMENTS – A SMALL STEP?	RESPONSE OF CYLINDRICAL COMPOSITE STRUCTURES TO UNDERWATER IMPULSIVE LOADING	EXPERIMENTAL CHARACTERISATION OF THE PROGRESIVE FAILURE OF GRID-SCORED SANDWICH STRUCTURES IN WIND TURBINE BLADES	MULTI-SCALE MODELLING OF FIBRE BUNDLES		
	Muchun Liu(Beihang University), Meihong Ge(Beijing Oriental Hanson Curtain Wall Technology Co. Ltd.), Song Yang(Beijing UFT Conference&Exhibition Co. Ltd)	Moritz Hübler(Institut fuer Verbundwerkstoffe GmbH), Martin Gurka(Institut fuer Verbundwerkstoffe GmbH), Ulf Paul Breuer(Institut fuer Verbundwerkstoffe GmbH)	Siddharth Avachat(Georgia Institute of Technology), Min Zhou(Georgia Institute of Technology)	Steffen Laustsen(Aalborg University)	Nilanjan Das chakladar(University of Manchester), Partha Mandal(University of Manchester), Prasad Potluri(University of Manchester)		
	We prepared two kinds of modified graphene and tested the impact strength of modified/epoxy nanocomposites, the reason why the epoxy matrix is enhanced or failed has been discussed.	A close look is taken at two of the main challenges for the manufacturing of new hybrid laminates. These challenges are directly linked to the special behavior of the integrated SMA filaments.	The objective of this analysis is to characterize the dynamic deformations and damage response of curved sandwich composites subjected to high intensity underwater impulsive loads.	The initiation and progression of failure in a grid-scored sandwich laminate is investigated when subjected to either uni- or multi-axial quasi static loading conditions.	The research deals with modelling of fibre assemblies with a view to increase the computational efficiency without restricting the fibre count to predict the intra-yarn fibre interactions.		
12:30	J LUNCH						

	Room 522	Room 518ab	Room 520ad	Room 519b	Room 710
10:50			BREAK		
	MODELLING AND SIMULATION II Chairs: Augustin Gakwaya, Zhongwei Guan	LCM 2 - PERMEABILITY Chairs: Philippe Boisse, François Trochu	NATURAL FIBER COMPOSITES 2 Chairs: Amar K. Mohanty, Manjusri Misra	DURABILITY AND AGING 2 Chairs: Martin Lévesque, Alan Plumtree	STIMULUS RESPONSIVE POLYMER & COMPOSITES SYMPOSIUM II Chair: Marie-Laure Dano; Andrew Johnston
11:10	FINITE ELEMENT MODELING OF BALLISTIC IMPACT ON MULTI-LAYER WOVEN FABRICS	EFFECT OF SPECIMEN HISTORY ON MEASURED IN- PLANE PERMEABILITY OF FABRICS	THE RECOVERY, REPROCESSING AND REUSE OF WASTE GLASS FIBRE FABRICS: CLOSED-LOOP RECYCLING	PREPARATION AND CHARACTERISATION OF NANOPARTICLE-DOPED COMINGLED COMPOSITES FOR IMPROVED FIRE PERFORMANCE	STIMULUS RESPONSIVE POLYMER AND MULTIFUNCTIONAL COMPOSITES: CHALLENGES AND PROSPECTS
	Deju Zhu(Hunan University), Barzin Mobasher(Arizona State University), S.d. Rajan(Arizona State University)	Andreas Endruweit(University of Nottingham), Xuesen Zeng(University of Nottingham), Andrew C Long(University of Nottingham)	Claire Fiona Wait, Nicholas Shotton-gale, Mohammed Shafiq Irfan, Surya Pandita, Liwei Wang, Mark Paget, Roger Price, John James, Gerard Fernando (University of Birmingham)	Spyros Anastasios Tsampas(Swerea SICOMP), Patrik Sven Fernberg(Swerea SICOMP), Giovanni Camino(Polytechnic Institute of Turin), Marco Monti, Per Blomqvist()	Jinsong Leng (Harbin Institute of Technology)
	A material model of woven fabric has been also implemented in LS-DYNA and was validated by comparing the FE simulation with the NASA ballistic test results.	The effect of the specimen history on the fabric structure is characterised. Its correlation with varying permeability for different batches of reinforcement fabrics is studied.	This study illustrates procedures developed to recover waste glass fibre fabric produced during a weaving process and manufacture filament wound tubes to replace cardboard tubes used in the factory.	The study focuses on the enhancement of fire behaviour of composites through the development and use of nanoparticle modified polymer fibres in their manufacturing.	Stimulus Responsive Polymer and Composites are materials that have one or more properties can be significantly changed in a controlled fashion by
11:30	NUMERICAL MODELLING OF PERFORATION RESISTANCE OF FOAM-BASED SANDWICH PANELS	INFLUENCE OF THE SHEARING OF TEXTILES ON THE IN-PLANE PERMEABILITY	INTERFACIAL ADHESION AND MECHANICAL BEHAVIOUR OF NATURAL FIBRE COMPOSITES: EFFECT OF SURFACE ENERGY AND PHYSICAL ADHESION	EFFECT OF HUMIDITY AND TEMPERATURE ON THE CURING AND AGING OF A ROOM TEMPERATURE EPOXY ADHESIVE	external stimuli.
	Jin Zhou(University of Liverpool), Wesley James Cantwell(Khalifa University of Science Technology and Research), Zhongwei Guan(University of Liverpool)	Matthias Arnold(Institut fuer Verbundwerkstoffe GmbH), Massimo Cojutti(Audi AG), Peter Mitschang(Institut fuer Verbundwerkstoffe GmbH)	Carlos Anibal Fuentes, Le Quan Ngoc Tran, Christine Dupont- gillain, Aart Willem Van vuure, Ignaas Verpoest (Katholieke Universiteit Leuven)	Émilie Charette, Edith roland Fotsing, Catherine Billotte, Edu Ruiz, Julian Gutiérrez (Ecole Polytechnique de Montreal), Daniel Grenier(Cent, de recherche indus, du Quebec CRIQ),	
	The FF model for foam based sandwich structures has been developed to model the impact response of oblique impact and conditions on pressure difference in an aqueous support and air.	In this paper the influence of textile shearing on the in-plane permeability is investigated. The permeability values can be used as material parameters for filling simulations.	An integrated physical-chemical-micromechanical approach is presented in order to study and control the interfacial adhesion strength in composite materials with a natural fibre reinforcement.	Impact of hygrothermal aging on the curing kinetics and the mechanical properties of epoxy adhesive was investigated using DSC and DMA and gravimetric measurements.	
11:50	MODELING WING LEADING EDGE MADE WITH SLM LATTICE CORE AND CFRP SKIN	OPTICAL PERMEABILITY MESUREMENTS OF NCF: INFLUENCE OF MATERIALPROPERTIES ON THE 2D PREFORM PERMEABILITY	FLAME RETARDANT KENAF/PLA BIOCOMPOSITES: EFFECT OF AMMONIUM POLYPHOSPHATE	EXPERIMENTAL AND NUMERICAL STUDIES OF HYGROTHERMAL AGING OF BIO-COMPOSITE SHORT FIBER HEMP / POLYPROPYLENE	NANOPAPER ENABLED SHAPE-MEMORY POLYMER COMPOSITE FOR ELECTRICAL ACTUATION
	Matthew Smith(), Zhongwei Guan(University of Liverpool), Wesley J Cantwell(), Bob Mines(University of Liverpool)	Ralf Schledjewski(Montanuniversitat Leoben), Harald Grössing(Montanuniversitat Leoben)	Donghwan Cho(Kumoh National University of Technology)	Karim Bensalem, Lotfi Toubal, Jean-christophe Cuilliere, Vincent Francois (University of Quebec at Trois-Rivieres), Papa birame Gning(Universite de Bourgogne)	Haibao Lu(Harbin Institute of Technology)
	This paper presents numerical modeling of structural impact response of wing leading edge (WLE) made with SLM lattice core and CFRP skin.	2d permeability behavior of NCF is determined, used as input parameters for filling simulations and the prediction quality of mold filling simulation is verified	In the present study, we studied how incorporation of ammonium polyphosphate into PLA influences the flame retardancy and the mechanical and thermal properties of kenaf/PLA biocomposites.	Experimental and numerical study of the influence of water aging on the mechanical behavior of hemp short fibers reinforced polypropylene bio-composite.	The purpose of this work is to provide details of all aspects of the nanopaper enabled SMP composites from fundamentals to applications on an intermediate level.
12:10	REALIZING WISHFUL DREAMTO PREDICT LAMINATE ULTIMATE STRENGTH UPON INDEPENDENT CONSTITUENT PROPERTIES ONLY	DETECTION OF PERMEABILITY VARIATIONS IN FOR EARLY QUALITY ASSESSMENT IN LIQUID COMPOSITE MOLDING	POLYPROPYLENE/KENAF COMPOSITES: THEIR MECHANICAL/FIRE RETARDANT PROPERTIES AND FIBER LENGTH RETENTION IN TWIN SCREW PROCESSING		DESIGN AND CHARACTERIZATION OF FILAMENT- WOUND COMPOSITE SHELLS REINFORCED BY GRID
	Zheng-ming Huang(Tongji University), Ling Liu(Tongji University)	Claudio Di Fratta, Luigi Di lillo, Florian Klunker, Paolo Ermanni (Swiss Federal Institute of Technology, Zurich)	Debes Bhattacharyya(University of Auckland)		Zaiwen Lin(Harbin Institute of Technology)
	A long-term dream is to predict ultimate strength of a laminate under any load only upon mechanical properties of its constituents measured independently. This article shows this dream is achievable	This work investigates a pressure sensor based approach to detect permeability variations during Liquid Composite Molding processes, with the aim to obtain early information on the product quality.	This paper studies twin screw compounding behaviour and degradation of kenaf fibres with polypropylene matrix for improving the thermal and mechanical characteristics of injection moulded products.		This advanced polymer structure significantly improved the payload capabilities and enabled the AGS structure to have a high mechanically resistive capability in practical applications.
12:30			LUNCH		
	Room 525	Room 520f	Room 520be	Room 516ab	
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10:50			BREAK		
-	BIOMEDICAL COMPOSITES Chairs: Christopher Hansent, François Barthelat	CHARACTERIZATION 1 Chairs: Ignaas Verpoest, Mehdi Hojjati	GREEN COMPOSITES 2 Chairs: Asami Nakai, Anh Dung Ngo	BIO & GREEN I - POSTER Chairs: Farjad Shadmehri, Gilbert Lebrun	
11:10	BIOMECHANICAL PROPERTIES OF RESORRABLE COMPOSITE BONE FRACTURE REPAIR PLATES Ifty Ahmed(University of Nottingham)	CORRELATIONS OF MECHANICAL AND IONIC CONDUCTION PROPERTIES WITH BICONTINUOUS MORPHOLOGIES OF STRUCTURAL ELECTROLYTES N. Shirshova, A. Bismarck, E. Smith Greenhalgh, M. Sp Shaffer, J. Hg Steinke (Imp. Col. of Sci.), S. Carreyette (Cytec), P. Johansson, M.	STUDY ON CHEMICAL TREATMENT OF CELLULOSE FIBER TO IMPROVE HEAT RESISTANCE AND THE MECHANICAL PROPERTY OF COMPOSITE MATERIALS USING TREATED FIBER Si Ha(Kyoto Institute of Technology), Teruo Kimura(Kyoto Institute of Technology), Haruhiro Ino(Kyoto Institute of	11:10 CHARACTERIZATION AND TREATMENT OF WATER HYACINTH FIBERS FOR NFRP COMPOSITES Terence Palad Tumolva 11:14 MEAN AND VARIATION BASED FUZZY CHARACTERIZATION OF YOUNG'S MODULUS OF A FLAX/EPOXY BIOCOMPOSITE MATERIAL Reza Soufian Khakestar, Lotfi Toubal, Luc Laperriere, Kossi Fabrice Sodoke	
	This paper presents biomechanical (flexural and torsional) studies conducted on rabbit tibiae using novel resorbable composite plates for bone fixation applications.	Matcurson, F. Jondowski, Chalmers G. Fetch, O. Kalmad, etc. Wienrich (RAM Fed. Inst. for Mat. Res.& Testing) Effect of morphology on ionic conductivity and mechanical properties of the structural electrolytes comprising of industrial epoxy resin an ionic liquid based electrolyte will be discussed	Technology), Akhiro Suzuoka() To improve heat resistance property of cellulose fiber, TEOS treatment is proposed. The heat resistant cellulose fiber reinforced composite has higher tensile strength even after long molding time.	11:18 INFLUENCE OF FABRICATION CONDITIONS ON PROPERTIES OF PLA/PBAT WOOD COMPOSITE STRAND Nattakarn Hongsriphan 11:22 PREPERATION AND CHARACTERIZATION OF GREEN COMPOSITE USING LACTIC ACID MODIFIED LIGNIN	
11:30	IN VIVO TESTING OF A PHOSPHATE GLASS FIBRE / PLA COMPOSITE USING A RABBIT TIBIA MODEL	PREDICTION OF ATTENUATED GUIDED WAVES PROPAGATION IN CARBON FIBER COMPOSITES	PREPREG STYLE FABRICATION OF ALL-CELLULOSE COMPOSITES	Sung hoon Kim, Jongshin Park 11:26 CHARACTERISATION OF THE MECHANICAL AND THERMAL DEGRADATION BEHAVIOUR OF NATURAL FIBRES FOR LIGHTWEIGHT AUTOMOTIVE APPLICATIONS	
	Andrew James Parsons(University of Nottingham)	Matthieu Gresil(University of South Carolina), Victor Giurgiutiu(University of South Carolina - Columbia)	Jeremias Schuermann(University of Canterbury), Tim Huber(University of Guelph), Mark P. Staiger(University of Canterbury)	José luis Rudeiros-fernández, James Thomason, John Liggat, Maria Soliman 11:30 SILK HYDROGEL COMPOSITE SCAFFOLD CONTAINING HYDROXYAPATITE NANOCRYSTAL Kim Hyung hwan, Kang Min ji, Park A reum, Kim Shin hwan, Park Young hwan	
	In vivo study of a phosphate glass fibre reinforced PLA composite in a fron-fracture) rabbit tibia model, compared to a metal control. The study focused on composite degradation and tissue response.	The advancement of composite materials in aircraft structures has led to on increased need for technologies that are able to detect and assess damage present in composites structures.	All-cellulose composites are fabricated using a prepreg style manufacturing process. Fabrication flexibility is investigated. The composites are examined and mechanical properties are determined.	II:34 POLYLACTIC ACID/HALLOYSITE NANOCOMPOSITES FILMS BY SOLVENT CASTING METHOD Rangika Thilan De silva, Pooria Pasbakhsh Rangika Thilan De silva, Pooria Pasbakhsh II:38 PHOSPHORUS-CONTAINING FLAME RETARDANT COMPOISITES WITH RAMIE FIBER AND POLY(LACTIC ACID)(PLA)	
11:50	A TEXTILE-BASED VIABLE COMPOSITE STENT FOR VASCULAR APPLICATION	FOREIGN OBJECT INDUCED FIBER UNDULATION INFLUENCE ON MECHANICAL PROPERTIES OF COMPOSITE LAMINATE	INVESTIGATION OF SI-GEL-NR INTERACTION IN SI- GEL/NR VULCANIZATE AND THE EFFECT OF PEG ON THE RUBBER VULCANIZATED	Tao Yu, Yan Li 11:42 APPLICATION OF FURAN RESIN TO GREEN COMPOSITES AND THE EFFECT OF PEROXIDE ON FURAN RESIN CURING	
	Valentine Gesche(Aachen University)	Henrik Herranen(Tallinn University of Technology), Alar Kuusik(Tallinn University of Technology), Henri Lend(Tallinn University of Technology), Steffen Czichon(Elan-Ausy GmbH), Jaan Kers(Tallinn University of Technology), Marko Piirlaid(Tallinn University of Technology)	Chanchai Thongpin(Silpakorn University)	Hiroha Tanaka, Masatoshi Kubouchi, Saiko Aoki, Terence Palad Tumolva 11:46 TENSILE PROPERTIES OF BAMBOO,JUTE AND KENAF MAT-REINFORCED COMPOSITES Zhilan Xu, Jungang Li, Mengyuan Liao, Yuqiu Yang, Hiroyuki Hamada	
	In this work, the correlation between textile process parameters and mechanical properties of a composite implant, the so called BioStent, was investigated.	The fiber undulation around elliptical foreign object inside GFRP laminate is investigated and the resin pockets at the ends of foreign object are minimized through optimization procedure.	The addition of PEG could act as an activator in vulcanization reaction of 15Si-gel/NR+PEG and 15PSi/NR+PEG. Crosslink density was enhanced.	11:50 IMPACT MODIFICATION OF WASTE PLASTIC/WOOD FLOUR COMPOSITES VIA STRUCTURAL MODIFICATION Adel Ramezani kakroodi, Yasamin Kazemi, Denis Rodrigue	
12:10	LOCK-IN THERMOGRAPHIC INSPECTION OF A HOLE DEFECT IN DENTAL COMPOSITE RESTORATION	STRAIN-SOFTENING RESPONSE OF LAMINATED COMPOSITES UNDER COMPRESSION	MECHANICAL CHARACTERIZATION OF PLA- BAMBOO FIBERS GREEN COMPOSITE	11:54 NEW FLAX/EPOXY AND CF/EPOXY COMPOSITE MATERIALS FOR BONE FRACTURE PLATE APPLICATIONS: A BIOLOGICAL AND WETTABILITY STUDY Zahra Shaghayegh Bagheri, Ihab El-sawi, Asma Amleh, Emil H. Schemitsch, Rad Zdero, Habiba Bougherara	
	Ja-uk Gu(Hanyang University), Nak-sam Choi(Hanyang University)	Navid Zobeiry(University of British Columbia), Reza Vaziri(University of British Columbia), Anoush Poursartip(University of British Columbia)	Fernando Ramirez(Universidad de Los Andes), Mauricio Gonzalez(Universidad de Los Andes), Nelson Eduardo Barrez(Universidad de Los Andes), Sebastian Castellanos(Universidad de Los Andes)		
	The infrared lock-in thermography method showed the effectiveness for detecting the hole defects of dental composite restoration under an optimum test condition.	The strain-softening response of composites is obtained by conducting compact compression tests and analyzing the strain- field data obtained using the digital image correlation technique.	The potential use of the composite prepared with the biodegradable polyester polyheatide (PLA) as a matrix and natural bamboo-guadua fibers as reinforcement is explored through mechanical testing.		
12:30			LUNCH		

12:30	Room 710	Room 519a	Room 514 LUNCH	Room 524ab	Room 524c
13:30		PLENARY (Room 710) ·	Markus J. Buehler: "Hierarchical Bio	ocomposites by Design".	Chain Decel Hubert
	MULTI-FUNCTIONAL NANOCOMPOSITES Chairs: Frank Ko, Brian George Falzon	MULTIFUNCTIONAL COMPOSITES SYMPOSIUM 3 Chairs: Hugh Alan Bruck, Wonbong Choi	SYMPOSIUM ON MARINE COMPOSITES 3 Chairs: Isaac M. Daniel, Roberta Massabo	FRACTURE AND DAMAGE 3 Chair: Sam Kaddour	FORMING OF ADVANCED COMPOSITES & ENGINEERING FABRICS 3 Chair: Youqi Wang
14:30	HOW DO CARBON NANOTUBE FIBERS GAIN THEIR STRENGTH?	SIMULATIONS OF THERMOMECHANICAL PERFORMANCE OF SMP-BASED MICROVASCULAR SYSTEMS	SANDWICH BEAM WITH INTERNAL RESONATORS SUBJECTED TO BLAST LOADS	RECENT PROGRESS ON BENCHMARKING CRACKING AND DAMAGE MODELS FOR FIBRE REINFORCED POLYMER COMPOSITES	SHAPING ANALYSIS OF A NON-CRIMP 3D ORTHOGONAL WEAVE E-GLASS COMPOSITE REINFORCEMENT
	Tsu-wei Chou (University of Delaware)	H. jerry Qi(University of Colorado at Boulder), Kai Yu(University of Colorado at Boulder), Jeffery W. Baur(Air Force Research Laboratory), David M Phillips(Air Force Research Laboratory)	Bhisham N Sharma(Purdue University), C.t. Sun(Purdue University)	Sam Kaddour(QinetiQ Ltd), Paul A Smith(University of Surrey), Michael John Hinton(National Composites Centre), Shuguang Li(University of Nottingham)	Juan Francisco Pazmino(Polytechnic Institute of Milan), Valter Carvelli(Polytechnic Institute of Milan), Stepan V. Lomov(Katholieke Universiteit Leuven)
	The current efforts provide fundamental understanding of the electromechanical behavior of CNT fibers and facilitate future optimal design of their performance in multifunctional composites.	Lossen reasonable with microvascular systems were investigated by using finite element based simulations and design guidelines were proposed for such systems.	We analyze the behavior of sandwich beams with internal resonators under broad spectrum loads such as blast loads. The performance of resonators tuned to different resonance frequencies was studied.	This paper brings to conclusion Part A of the WWFE-III. It gives an account of the lessons learnt, a comparison between the predictions of the models for all the 13 Test Cases	Formability of a single layer E-glass non-crimp 3D orthogonal woven reinforcement (3WEAVE@-3Tex Inc) is experimentally investigated. The study involves two moulds, tetrahedral and double-dome.
14:50		CARBON FIBRE REINFORCED EPOXY COMPOSITES WITH VARIABLE STIFFNESS FOR USE IN MORPHING AEROSTRUCTURES	RESIDUAL STRENGTH OF FULL SCALE GRP LAMINATES WITH RANDOMLY DISTRIBUTED FRAGMENT DAMAGES	CHALLENGING LESSONS FROM THE SECOND WORLD-WIDE FAILURE EXERCISE (WWFE-II):	TRANSITIONAL BEHAVIOUR OF PREPREGS IN AUTOMATIC FIBRE DEPOSITION PROCESSES
		Paul Robinson(Imperial College of Science), Henry Maples(Imperial College of Science), Alexander Bismarck(Imperial College of Science), Oliver Gaite(Imperial College of Science), Stephen Smith(Imperial College of Science)	Sohrab Kazemahvazi(Royal Institute of Technology), Martin Nilsson(), Dan Zenkert(Royal Institute of Technology)	Sam Kaddour(QinetiQ Ltd), Michael John Hinton(National Composites Centre)	Dmitry Ivanov(University of Bristol), Carwyn Ward(University of Bristol), Kevin Potter(University of Bristol)
		An investigation of a controllable stiffness composite is described including stiffness measurement, theoretical prediction and trials to integrate heating and actuation in the novel composite.	The strength of laminates with fragment damages has been investigated experimentally. A model has been developed to predict the residual attength and is validated against the experiments.	This paper is a summary of the WWFE-II and gives an account of the lessons learnt and the gaps which need to be bridged.	The paper discusses a duality in the material response of a toughened epoxy system. Understanding of the transition from squeezing to bleeding flow is crucial for the design of consolidation program.
15:10	EROSIVE AND ABRASIVE WEAR RESISTANCE OF TRANSPARENT NANOCOMPOSITE COATINGS FILLED WITH SILICA NANOPARTICLES	TOWARD COMPUTATIONAL SMART MATERIALS WITH CONTROLLABLE STIFFNESS	SHOCK FOCUSING IN WATER IN A CONVERGENT CARBON FIBER COMPOSITE STRUCTURE	NUMERICAL STUDY OF THE EFFECT OF NYLON 6,6 ELECTROSPUN NANOFIBROUS MATS TO THE DELAMINATION STRENGTH OF CFR-EPOXY	CHARACTERIZATION OF CURED NCF COMPOSITES USED IN THE FORMING OF WIND TURBINE BLADES
	Zhong Zhang(National Center for Nanoscience and Technology)	Michael A Mcevoy(University of Colorado at Boulder), Nicholas D. Farrow(University of Colorado at Boulder), Nikolaus Correll(University of Colorado at Boulder)	Chuanxi Wang(University of Southern California), Veronica Eliasson(University of Southern California)	COMPOSITIE LAMINATES Fabrizio Moroni, Alessandro Tirondi, Gregorio Giuliese (University of Parma), Seeram Ramakrishna(National University of Singapore) Giangiacomo Minak, Roberto Palazzetti, Andrea Zucchelli (University of Bologna)	Cynthia Mitchell(University of Massachusetts at Lowell), James A. Sherwood(University of Massachusetts at Lowell), Konstantine A Fetfatsidis(University of Massachusetts at Lowell), Lisa Dangora(University of Massachusetts at Lowell), Jennifer L
	The colloidal and pyrogenic nanosilica particles were employed to prepare transparent polymer coatings. The erosive and abrasive wear were studied.	We present a periodic composite material that embeds sensing, actuation, communication and computation. The material allows accurate control of its stiffness using distributed, networked control.	This work studied the effect of the underwater explosion on water-filled convergent carbon fiber structures. Both experiments and numerical simulations have been carried out.	In the present work authors investigate the influence of the electrospun nanofibrous mats as interlaminar reinforcements to be used composite laminate.	Beam-shell finite element model to calculate the cured composite material properties. Method automatically tracks evolution of yarns during the forming process.
15:30	PREPARATION AND PROPERTIES OF MMT/EPOXY/CARBON FIBER MULTI-SCALE COMPOSITE	HIGH STROKE ACTUATION OF ALIGNED CNT- PARAFFIN COMPOSITE FILMS	EFFECT OF FLUID-STRUCTURE INTERACTIONS ON UNDERWATER IMPLOSION DYNAMICS	NEW DEVELOPMENTS IN ONSET THEORY FOR ONSET OF RESIN FAILURE IN FIBRE REINFORCED COMPOSITES	TEMPERATURE AND RATE DEPENDENT MULTI- SCALE SHEAR MODELLING OF MOLTEN THERMOPLASTIC ADVANCED COMPOSITES
	Shijie Zhang(Xi'an Aerospace Composite Materials Research Institute)	Davor Copic(University of Michigan - Ann Arbor), A. john Hart(University of Michigan - Ann Arbor)	James Seabury Briscoe(University of Maryland at College Park), Sung Won Lee(University of Maryland at College Park)	Shen hin Lim(University of New South Wales), Donald Wainwright Kelly(University of New South Wales), Garth Morgan Kendall Pearce(University of New South Wales), B. gangadhara Prusty(University of New South Wales), Alan Crosky(University of New South Wales)	Philip Harrison(University of Glasgow), Nuno Curado- correia(INEGI - Institute of Mechanical Engineering and Industrial Management)
	The MMT/epoxy resin nanocomposite and MMT/epoxy/carbon fiber multi-scale composite were prepared using organic montmorilloute. And their mechanical and thermal behaviour were evaluated.	We fabricate high-stroke thin film actuators via infiltration of pre-bucked CNT forests with paraffin wax. The films expand reversibly by 20% in the vertical direction upon heating to 175 C.	The paper details the response of marine structures to dynamic loading from underwater implosions in an effort to mitigate the emitted pressure waves felt by other nearby structures.	This paper presents recent work on the recently developed Onset Theory to emphasise its application to onset of irreversible damage in carbon fibre and glassy polymeric resins.	Modelling the forming of advanced thermoplastic composites by linking the shear parameters of a hypo-elastic constitutive model to predictions of a multi-scale energy model.
15:50	ANALYSIS OF CARBON NANOTUBE INTEGRATED COMPOSITE STRUCTURES USING MULTISCALE APPROACH	REPLICA MOLDING OF LIQUID CRYSTAL POLYMER MICROSTRUCTURES FOR ACTIVE SURFACES	STRESS AND STRAIN FIELDS IN SANDWICH T- JOINTS SUBJECTED TO SIMULATED SLAMMING LOADS	A NOVEL STRENGTH MODEL FOR UNIDIRECTIONAL FIBRE-REINFORCED COMPOSITES WITH REALISTIC FIBRE PACKINGS	EFFECT OF TEXTILE ARCHITECTURE ON ENERGY ABSORPTION OF WOVEN FABRICS SUBJECT TO BALLISTIC IMPACT
	Zeaid Hasan(Arizona State University), Aditi Chattopadhyay(Arizona State University)	Davor Copic(University of Michigan - Ann Arbor), Assaf Ya'akobovitz(University of Michigan - Ann Arbor), A. john Hart(University of Michigan - Ann Arbor)	Mark Battley(University of Auckland), James Flett(University of Auckland), Tom Allen(University of Auckland)	Ignaas Verpoest(Katholieke Universiteit Leuven), Yentl Swolfs(Katholieke Universiteit Leuven), Larissa Gorbatikh(Katholieke Universiteit Leuven)	Cheng-chou Eric Yang(University of Melbourne), Phuong Tran(University of Melbourne), Tuan Ngo(University of Melbourne), Priyan Mendis(University of Melbourne), Bill Humphries(CSIRO)
	The use of nanocompsoites in structural level components to improve their overall performance against unique composite failure modes is presented in the following study.	Liquid crystal polymer microstructure actuators are fabricated over large areas using a replica molding technique, and their anisotropic shape change upon illumination is characterized.	Digital image correlation and finite element analysis are used to characterise the stress and strain fields in sandwich panels with bulkhead T-joints subjected to simulated water slamming loads.	This paper presents a new strength model for unidirectional composites. The stress redistributions in random and ordered packings are calculated and incorporated into a strength model	The aim of this study is to investigate the effect of fabric architecture towards its impact resistance through material testing and FE modeling in meso-scale.
16:10	EFFECT OF CURRING PARAMETERS ON DISPERSION AND ELECTRICAL CONDUCTIVITY OF EPOXY/CNT COMPOSITES DEEINE BY IMAGE ANALYSIS	MULTIFUNCTIONAL COMPOSITES BY SEGMENTATIONAND ASSEMBLY	IMPACT PROPERTIES OF WATER EXPOSED GFRP LAMINATES WITH OUTERMOST STEEL LAYERS	CRUSHING OF COMPOSITE STRUCTURES AND PARAMETER IDENTIFICATION FOR MODEL	RESPONSE SURFACES OF MECHANICAL BEHAVIOR OF DRY WOVEN FABRICS UNDER COMBINED
	Ewelina Ciecierska(Technical University of Warsaw), Anna Boczkowska(Technical University of Warsaw), Krzysztof Jan Kurzydłowski(Technical University of Warsaw)	Thomas Siegmund(Purdue University), Somesh Khandelwal(Purdue University)	Ezequiel Poodts(University of Bologna), Daniele Ghelli(University of Bologna), Tommaso Maria Brugo(University of Bologna), Riccardo Panciroli(Polytechnic Institute of New York University), Giangiacomo Mineb/Uleiversite of Polenova (Sindy Engel(Technische Universitat Bergakademie Freiberg), Christian Boegle(BMW Group), Dirk Lukaszewicz(BMW Group)	Mojtaba Komeili(University of British Columbia), Abbas Milani(University of British Columbia)
	In our work the focus is put on dispersion of CNT in the epoxy matrix cured at different temperature. The quantitative analysis was made how different curing parameters influences on CNT dispersion.	Segmentation and assembly is an approach to create hybrid materials. Two examples are presented, a tensegrity and a tesserae composite.	painaa (unversity of Booggna) The aim of the study is to determine the possibility of using the fiber metal laminates concept to avoid hygrothermal degradation of marine vessels, replacing the gel coat with a thin layer of steel.	Rectangular braided tubes made of C-fibre/epoxy are crushed axially and oblique. Data is evaluated by means of response surface methodology.	Meso-level model of a glass woven fabric is identified from standard tests and used to conduct virtual experiments and extract complex macro-level behavior of the material under combined loading.
16:30			BREAK		

12:30	Room 522	Room 518ab	Room 520ad	Room 519b	Room 520c	
13:30	PLENARY (Room 710) - Markus J. Buehler: "Hierarchical Biocomposites by Design".					
	MODELLING AND SIMULATION III Chairs: Goran Ferlund, Raj Das	LCM 3 - PROCESSING Chairs: Suresh G. Advani, Christophe Hahn	NATURAL FIBER COMPOSITES 3 Chair: Tri-Dung Ngo	BONDED JOINTS 1 Chairs: Shahram Aivazzadeh, Stéphane Fontaine	Chair: Pascal Hubert STEPHEN TSAI AWARD Chair: Paul A. Smith	
14:30	EXPERIMENTAL AND NUMERICAL STUDY OF THE CURE INDUCED DEFORMATIONS IN COMPOSITES PRODUCED BY VACUUM INFUSION	A STUDY OF CONSOLIDATION EQUILIBRIUM IN COMPOSITE PARTS MADE BY FLEXIBLE INJECTION	EFFECT OF REPROCESSING CYCLES ON MORPHOLOGY AND PROPERTIES OF ETHYLENE VINYL ACETATE (EVA) COPOLYMER/OLIVE HUSK FLOUR COMPOSITES	IMPROVEMENT IN THE ADHESIVE PROPERTY OF CHEMICALLY STABLE POLYMERIC MATERIALS AND FRP	INNOVATIVE GLASS-CERAMIC MATRIX COMPOSITES: PROCESSING AND CHARACTERIZATION	
	Antoine Parmentier(Cenaero), Benoit Wucher(Cenaero), Philippe Martiny(Cenaero)	Joffrey Renaud(Ecole Polytechnique de Montreal), Philippe Causse(Ecole Polytechnique de Montreal), Edu Ruiz(Ecole Polytechnique), François Trochu(Ecole Polytechnique de Montreal)	Mustapha Kaci(Universite de Bejaia)	Hitoshi Kanazawa(Fukushima University)	Anais Farrugia(Institut Clément Ader), Gilles Dusserre(Institut Clément Ader), Thierry Cutard(Institut Clément Ader), Magali Rollin(), Stephanie Fouquet(Herakles)	
	The comparison between experimental and simulation results of the present study have helped highlighting important factors requiring attention in modelling the cure-induced deformations.	This work studies the consolidation equilibrium during the fabrication of composite parts by flexible injection in order to quantify the abilities of this new process in terms of void content.	Investigation of the reprocess-ability of EVA copolymer/olive husk flour composites in an extruder in presence of ethylene/hutyl aerylate/glycidyl methacrylate used as compatibilizer.	Polymeric materials such as PP. PET, silicone resins, fluorocarbon resins, etc. and FRP were modified by a simple technique and adhered to other materials with usual adhesives including starch.	A new kind of glass-ceramic matrices for structural composites was developed for continuous thermal exposure applications. How does the manufacturing process impact the properties of these composites?	
14:50	DIRECT MEASUREMENT OF OUT-OF-PLANE AND IN- PLANE CURE SHRINKAGE STRAIN IN COMPOSITES BY EMBEDDED FIBER-OPTIC SENSORS	HIGH-PRESSURE RTM PROCESS VARIANTS FOR MANUFACTURING OF CARBON FIBER REINFORCED COMPOSITES	EXPERIMENTAL AND THEORETICAL STUDY OF THE TENSILE MODULUS OF NEEDLE PUNCHED HEMP FIBER MAT COMPOSITES	ADHESIVE BONDING CHARACTERISATION OF COMPOSITE JOINTS	POLY (VINYL ALCOHOL)/GRAPHENE OXIDE FIBER PREPARED BY GEL PROCESS	
	Shu Minakuchi(The University of Tokyo)	Raman Chaudhari(Fraunhofer Institute for Chemical Technology (ICT)), Michael Karcher(Fraunhofer Institute for Chemical Technology (ICT)), Peter Elsner(Fraunhofer Institute for Chemical Technology (ICT)), Frank Henning(Fraunhofer Institute for Chemical Technology (ICT))	Mahi Fahimian(University of Manitoba), Raghavan Jayaraman(University of Manitoba)	King Jye Wong(Universite de Bourgogne), Xiaojing Gong(Universite de Bourgogne), Shahram Aivazzadeh(Universite de Bourgogne), Mohd N	Seira Morimune(Kobe University)	
	This study developed a fiber-optic-based method that can evaluate directional dependency of cure in an autoclave. The results showed that cure of unidirectional composites is transversely anisotropic.	The current paper address new variants of the RTM process namely high-pressure injection RTM and high-pressure compression RTM and analyzes the influence of process variables on the laminate quality.	Effect of different needle punch density and manufacturing pressure on tensile modulus of hemp mat composites have been studied experimentally and theoretically.	Taming Universit Technologi statistical This work focuses on the characterisation of the adhesive bonded composite joints using different patch stacking sequences, adhesives and surface treatment methods.	Poly(vinyl alcohol)/graphene oxide nanocomposite fibers were prepared through gel process, followed by hot drawing. The drawn nanocomposite fibers showed high mechanical and thermal properties.	
15:10	AN APPROACH TOWARDS A BASIC MATERIALS CHARACTERIZATION FOR THE SIMULATION OF PROCESS INDUCED DEFORMATIONS	INVESTIGATION OF INFLUENCING PARAMETERS WITH RESPECT TO FILLING TIME IN VIBRATION ASSISTED RTM PROCESSES	MECHANICAL TESTING OF SCALED CELLULOSE NANO-FIBER BASED COMPOSITES MADE USING MICRO-RTM PROCESS	INVESTIGATION ON THE FAILURE MECHANISMS OF COMPOSITE FASTENERS WITH COUNTERSUNK HEAD IN QUASISTATIC AND FATIGUE LOADING	A NEW MULTI-PHYSICS MOLECULAR DYNAMICS FINITE ELEMENT METHOD FOR DESIGNING GRAPHENE BASED NANO-STRUCTURES	
	Mathias Peter Hartmann(Technische Universitat Munchen), Matthias Strebinger(Technische Universitat Munchen), Roland Hinterhoelzl(Technische Universitat Munchen)	Reinhold Meier(Technische Universitat Munchen), Julian Heim(Technische Universitat Munchen), Swen Zaremba(Technische Universitat Munchen), Klaus Drechsler(Technische Universitat Munchen)	Bamdad Barari(University of Wisconsin - Milwaukee), Krishna M. Pillai(University of Wisconsin - Milwaukee)	Martin Schuett(Technische Universitat Hamburg-Harburg), Hans Wittich(Technische Universitat Hamburg-Harburg), Clémence Vernier(Bishop GmbH), Frank Nussbaeumer(Bishop GmbH), Karl Schulte(Technische Universitat Hamburg-Harburg)	Andre Antoine renaud Wilmes(Imperial College of Science), Silvestre T Pinho(Imperial College of Science)	
	Parameters for the essential property development models to simulate process induced deformations are estimated based on a minimal set of dynamic scanning calorimetry (DSC) and rheometer tests.	Epoxy resins show shear thinning behavior. Influencing parameters for the creation of additional shear rates via a vibration engine resulting in lowered resin viscosity are studied by means of DoE.	This paper discusses the results of the tensile and three-point bending tests conducted with Cellulose nano fiber-based and other composites.	This investigation presents a detailed study on the failure mechanisms of composite fasteners with countersunk head in quasistatic and fatigue loading.	A new Multi-Physics Molecular Dynamics Finite Element Method is derived from first principles, implemented in commercial FE software and shown to be equivalent to MD at reduced a computational cost.	
15:30	NUMERICAL MODELLING OF GRADED FOAM BASED SANDWICH STRUCTURES SUBJECTED TO IMPACT	INVESTIGATION OF CNT FILTERING ACCORDING TO IN-PLANE AND OUT-OF-PLANE LCM INJECTION STRATEGIES	NATURAL FIBER REINFORCED BIOCOMPOSITES: EFFECT OF FIBER TREATMENTS BY ULTRASOUND	GLOBAL AND LOCAL INFLUENCE OF STACKING SEQUENCE ON THE STRENGTH OF ADHESIVELY BONDED JOINTS OF CFRP LAMINATES	CONTRIBUTIONS TO THE PROCESS MODELLING OF RESIN INFUSION UNDER FLEXIBLE TOOLING (RIFT) MANUFACTURING FOR COMPOSITE AEROSTRUCTURES	
	Jin Zhou(University of Liverpool), Zhongwei Guan(University of Liverpool), Wesley J Cantwell()	Timo Grieser(Institut fuer Verbundwerkstoffe GmbH), Peter Mitschang(Institut fuer Verbundwerkstoffe GmbH)	Mohammad Dalour Beg(Universiti Malaysia Pahang)	Jerome Rousseau(Universite de Bourgogne), Purimpat Satthumnuwong(University of Phayao)	Robert Samuel Pierce(Monash University), Brian George Falzon(Queen's University Belfast), Mark Thompson(Monash University), Romain Boman(Universite de Liege)	
	The low velocity impact response of sandwich structures based on layered foams cores have been investigated both experimentally and numerically.	Different injection strategies are applied to control the filtering of CNTs during the impregnation of technical textles. The change of resistance was utilized as CNT distribution indicator.	Raw empty fruit bunch (EFB), alkali treated EFB and simultaneous ultrasound-alkali treated EFB fibers of oil palm were incorporated in poly(lactic acid) (PLA) for fabricating biocomposites.	This experimental study shows the concurrent global and local influences of the stacking sequences on the strength of adhesively bonded single lap joints of carbon/epoxy laminates	This work summarises contributions to a predictive and complete process model for RIFT manufacturing which aims to substitute costly trial and error practices for large composite aerostructures.	
15:50	NUMERICAL EVALUATION OF PERIODIC BOUNDARY CONDITION ON THERMO-MECHANICAL PROBLEM USING HOMOGENIZATION METHOD	PREFORM COMPACTION AND DEFORMATION DURING THROUGH-THE-THICKNESS IMPREGNATION		LASER THROUGH-TRANSMISSION WELDING OF WHITE-PIGMENTED GLASS-PEI TO CARBON-PEI	GAS PERMEABILITY OF PARTIALLY SATURATED FABRICS	
	Muhammad Ridlo erdata Nasution(Tokyo Metropolitan University), Naoyuki Watanabe(Tokyo Metropolitan University), Atsushi Kondo(Tokyo Metropolitan University)	David Becker(Institut fuer Verbundwerkstoffe GmbH), Markus Brzeski(Institut fur Verbundwerkstoffe GmbH), Dominik Linster(Request Pending), Peter Mitschang(Institut fuer Verbundwerkstoffe GmbH)		Dustin Louis Dequine(Fiberforge Corporation)	Thomas Anthony Cender(University of Delaware), Pavel Simacek(University of Delaware), Suresh G Advani(University of Delaware)	
	Asymptotic expansion homogenization is performed to analyzed composite structure by applying periodic boundary condition (BC). New method is proposed by relieving periodic BC in thickness direction.	Compaction and permeability studies are compared with a new simultaneous approach for the investigation of hydrodynamic compaction of textile reinforcements during through-the- thickness impregnation.		Laser through-transmission welding (LTTW) of fiber-reinforced glass & carbon fiber thermoplastic composites is an effective low- cost, high-volume joining method for advanced composite structures.	A partially impregnated pre-preg consisting of a resin film layered on a dry fabric was studied to determine its in-plane permeability to gas as a function of resin saturation in the fabric.	
16:10	NUMERICAL ANALYSIS ON CURE-INDUCED DEFORMATION OF FIBROUS COMPOSITE LAMINATES	PREFORM INFLUENCE ON MECHANICAL BEHAVIOR OF STIFFENED PANELS MANUFACTURED BY LIQUID RESIN INFUSION		NUMERICAL AND EXPERIMENTAL INVESTIGATION OF COMPOSITE BOLTED JOINTS REPAIRED WITH INSERTS	MODELING ELASTIC PROPERTIES OF RANDOMLY ORIENTED FIBER COMPOSITES	
	Pan Li(Shandong University), Yuxi Jia(Shandong University), Peng Qu(Shandong University), Xiaoxia Wang(), Shanlong Li(Shandong University)	Thomas Bonnemains(Universite de Bretagne Occidentale), Eric Lolive(Universite de Bretagne Occidentale), Franck Le poulain(Universite de Bretagne Occidentale)		Evangelos Ioannis Avgoulas(Imperial College of Science), Sergio Tejada(Imperial College of Science), Cesare Stocchi(Imperial College of Science), Paul Robinson(Imperial College of Science), Silvestre T Pinho(Imperial College of Science)	Hadi Moussaddy(Ecole Polytechnique de Montreal), Daniel Therriault(Ecole Polytechnique de Montreal), Martin Lévesque(Ecole Polytechnique de Montreal)	
	In this study, we used two finite element models to make a comparison, and then dicuss when the simpler elastic model is the better choice in FEA.	In this paper, stiffened panels manufactured using LRI process are considered. The influence of the type of preform (powdered or knitted) on the mechanical properties of the part is studied.		A finite element and experimental investigation of the static mechanical behaviour of single-lap composite joints, with countersunk bolts, repaired with metallic inserts.	The elastic properties of randomly oriented fiber composites were determined using 1) finite element homogenization of the representative volume element and 2) analytical micromechanical models.	
16:30			BREAK			

12:30	Room 525	Room 520f	Room 520be		Room 516ab
13:30		PLENARY (Room 71	0) - Markus J. Buehler: "Hierarchical	Biocon	nposites by Design".
	BIOCOMPOSITES 1 Chairs: David Jesson, Hao Wang	CHARACTERIZATION 2 Chairs: Jens Schuster, Hiroyuki Hamada	GREEN COMPOSITES 3 Chairs: Larry Lessard, Johanne Denault		Chair: Fascal Hubert BIO & GREEN II - POSTER Chairs: Michael Richard Kessler, Sean McKay
14:30	CYTIDINE FUNCTIONALIZATION PROMOTES SVNERGISTIC MECHANICAL PROPERTIES IN NACRE- MINETIC NANOCOMPOSITES	INFLUENCE OF TEMPERATURE ON PHASE TRANSITIONS IN GLASS FIBER REINFORCED EPOXIES FOR ELECTRICAL SLOT INSULATION Rudi Valbuic(ABB Schwigt & C. Compette Dessent)	BASALT FIBER REINFORCED POLY(LACTIC ACID) COMPOSITES FOR ENGINEERING APPLICATIONS	14:30 14:34	CFRP RECYCLING USING DEPOLYMERIZATION OF ACID ANHYDRIDE CURED EPOXY RESIN Katsuji Shibata, Mitsuru Sasaki PROCESSING AND PROPERTIES OF NATURAL FIBERS REINFORCED THERMOPLASTIC AND THERMOSETING COMPOSITES
	Interpretation of polynomial interaction of the second sec	Amar (funtarious and the second secon	non-edgen/yourder/or construction of the second of the	14:38	Joao Francisco Silva, Joao Pedro Nunes, Ana Catarina Duro, Bruno Francisco Castro A STUDY ON THE MECHANICAL PROPERTY OF GLASS/JUTE INTER-LAMINATE HYBRID FABRIC COMPOSITE
14:50	while groups and/ws synce.goue increase of strength and strain in nacre-mimetic lamellar self-assembly films.	Dara, unectinal spectroscopy for the Characterization of phase transitions in GF-reinforced epoxies used for generator slot insulation. IMPROVEMENT OF IMPREGNATION AND	produce polymers with flattraf resolution based based holes to produce polymer composites suitable for engineering applications. DEVELOPMENT OF MULTI-SCALE BIOCOMPOSITES	14:42	Shunyu Tang, Zhiyuan Zhang, Masayuki Kitamura, Yuqiu Yang, Hiroyuki Hamada FIBRE CHARACTERISATION OF STEAM THERMAL PROCESS RECYCLED CARBON FIBRE/EPOXY COMPOSITES Maxime Boulanghien
14.50	FOR DESIGN OF COMPOSITE STRUCTURES Andrey Malakhov(Institute of Machines Science), Alexander Pailor/Institute of Machines Science)	MECHANICAL PROPERTIES OF CFRTP COMPOSITES BY MICRO-BRAIDED YARNS Patcharat Wongsriraksa(Kanazawa Institute of Technology), Acami Nelarificifi Universiti Virone'i Urawa (Kanazawa	FROM FLAX, NANOCELLULOSE AND EPOXY BY RESIN INFUSION Steven Phillips(McGill University), Larry Lessard(McGill University), Parcel, Hubert(McGill University), Pain	14:46	INFLUENCE OF POLYURETHANE SURFACE TREATMENT ON BASALT REINFORCED THERMOSETTING EPOXY RESIN MATRIX COMPOSITES: MECHANICAL AND THERMAL PROPERTIES Yang Jiahui, Mengyuan Liao, Zhenjin Cui, Hiroyuki Hamada, Yuqiu Yang
	The paper presents modeling of wood structure, namely fiber distribution in a branch-trunk junction. The method of composite structure design using curvilinear fibers trajectories is offered.	Institute of Technology, Isos Kimpara (Kanazawa Institute of Technology) To evaluate the impregnation state and mechanical properties of the composite, the CF/TP composites were fabricated and to improve the both properties by using surface treatment on carbon fiber.	Kno(University of Toronto), Mohini Sain(University of Toronto), Cristian Demaria(McGill University) Composites were prepared from flax and nanocellulose by resin infusion and subjected to void analysis, impact and short beam tests. The results highlight how nano-modifiers can affect part quality.	14:50 14:54 14:58	THE KRLIABULTY ANALYSIS OF THE METHAL METHACKYLATE HARDENED HYBRID POPLAR WOOD Weidan Ding, Dexiang Wu, Ahmed Koubaa, Abdelkader Chaala, Cuicui Luo RECYCLING OF AUTOMOTIVE SHEET METAL-FIBRE REINFORCED PLASTIC-HYBRID STRUCTURES Bernd Siewers, Christian Lauter, Joerg Niewel, Thomas Troester STUDY ON PROPERTIES OF COMPOSITES REINFORCED BY HEAT-TREATED GLASS FIBRES SIMULATING THERMAL PECCYCLING CONDITIONS
15:10	FAST AND SCALABLE SELF-ASSEMBLY APPROACHES TO BIOINSPIRED NANOCOMPOSITE FILMS AND COATINGS	STUDY ON DYNAMIC RESPONSE OF FRP FLOAT FOR LIGHT SEAPLANE	MECHANICAL PROPERTIES OF GLASS SHORT FIBER/WOOD POWDER/POLYPROPYLENE HYBRID COMPOSITES	15:02	Ulf Nagel, Chih-chuan Kao, James Thomason ESTIMATION OF MECHANICAL PROPERTIES FOR FIBER REINORCED COMPOSITES WITH WASTE FABRIC AND POLYPROPYLENE FIBER
	Andreas Walther(Aachen University)	Kazuki Wakizaka(Nihon University), Yoshio Aoki(Nihon University), Akihisa Tabata(Nihon University), Goich Ben(Nihon University)	Ying Yu(Kyoto Institute of Technology), Yuqiu Yang(Donghua University), Manabu Nomura(), Hiroyuki Hamada(Kyoto Institute of Technology)	15:06	Yuki Murakami, Tetsusei Kurashiki, Daiki Tanabe EFFECT OF PLASMA SURFACE TREATMENT OF RECYCLED CARBON FIBER ON THE MECHANICAL PROPERTIES OF RECYCLED CFRP
	Bioinspired films via fast self-assembly in water based yield excellent mechanical properties (E_{45} GPa, $UTS>300$ MPa) and attractive functionalities (transparency, gas barrier, fire shielding).	we conducted alighting experiments and numerical simulations of FRP Scaphane floats on the basis of the alighting positions specified in the Airworthiness Standards.	The effect of Glass fiber/wood powder/pp hybrid composites hybridization was evaluated. The elastic modulus was predicted by using the rule of hybrid mixtures equation and classical lamination theory.	15:10	Hooseok Lee, Yukio Ozaki, Masachika Yamane, Jun Takahashi, Isamu Oshawa FLAX FILLED THERMOPLASTIC BIOCOMPOSITE DEVELOPMENT FOR AUTOMOTIVE APPLICATIONS Stephen Meatherall, Frank Wheeler BACTERIAL CELLULOSE-SYNTHETIC POLYMER COMPOSITES FOR BONE TISSUE ENGINEERING
15:30	ENGINEERING AND MODELING OF TENSILE STRENGTH OF PAPER-THERMOSET COMPOSITES	STUDY AND SIMULATION OF THERMAL CONDUCTIVITY OF ORGANIC MATRIX COMPOSITES	FABRICAION AND MECHANICAL PROPERTIES OF 3D JUTE FABRICS REINFORCED COMPOSITES	15:18	Catalin Zaharia, Paul Octavian Stanescu, Izabela Cristina Stancu, Bianca Galateanu, Eugeniu Vasile LIGNIN FIBERS FOR PRODUCTION OF GREEN NANOCOMPOSITES Vida Poursorkhabi, Manjusri Misra, Amar K Mohanty
	Henri Kroeling(Technische Universitat Darmstahl), Sabrina Mehlbase(Technische Universitat Darmstahl), Narmin Nubbo(Fraunhofer Institute for Structural Durability and System Reliability LBP), Johanna Fleckenstein(Fraunhofer Institute for Structural Durability and System Dalability (TP), Naendo, Federal (Pariahetter) (Pariahetter) (Pariahetter)	Bénédicte Reine(Institut Clément Ader), Jeremy Di tomaso(), Gilles Dusserre(Institut Clément Ader), Philippe A Olivier(Institut Clément Ader) In this namer models were developed to improve the thermal	Jieng-chiang Chen(Vanung University), Chang-mou Wu(National Taiwan University of Science and Technology), Zi- jie Lin(Vanung University), Yi-an Teng(Feng Chia University) Manufacturina and mechanical properties of three-dimensional		
	and composite properties strongly. A model is given to predict and composite tensile strength over a wide range.	conductivity of thermoset filled matrix and heat transfer of the composite with carbon fibre reinforcements and matrix effective properties.	(3D) jute fabrics composites were investigated in current research. The 3D composites have good flexture strength.		
15:50	COLLOIDAL INONIC SELF-ASSEMBLY BETWEEN ANIONIC NATIVE CELLULOSE NANOPTIBRILS AND CATIONIC BLOCK COPOLYMER MICELLES INTO BIOMIMETIC NANOCOMPOSITES Miao Wang, Anna Olzewska, Janne Ruokolainen, Janne Laine, Monika Osterberg, Olii Ikkala (Aalio University), Andreas Walher(Aachen University), Jani-markas Mallo, Pelki, Schacher (Friedrich-Schiller	THERMAL CONDUCTIVITY MEASUREMENT OF GFRP AT CRYOGENIC TEMPERATURE Kazuki Hayakawa(Tokyo Institute of Technology), Takayoshi Inoue(Tokyo Institute of Technology), Yuji Suzuki(Tokyo Institute of Technology)	FIRE RESISTANCE CELLULOSIC FIBERS FOR GREEN POLYMER COMPOSITES TD. Ngo, MT. Ton-That, W. Hu (National Research Council of Canada)		
	We present a facile ionic self-assembly between native cellulose nanofibrils and cationic amphiphilic block copolymer micelles with rubbery core towards biomimetic nanocomposites.	A temperature compensation method using thermal contact resistance of a specimen-thermocouple was proposed and applied to thermal conductivity measurements of GFRPs in the cryogenic temperature.	An innovative and sustainable treatment approaches to retard the burning of cellulosic fibers for composite production in which a minimum amount of non-toxic and low cost inorganic chemicals		
16:10	BIO-INSPIRED NACRE-LIKE COMPOSITES VIA SIMPLE, FAST, AND VERSATILE TECHNIQUES SUCH AS DOCTOR-BLADING	IMPROVED THERMAL PROPERTIES WITH HYBRIDIZATION OF THE FILLERS FOR THERMOPLASTIC MATERIALS			
	Seyed mohammad Mirkhalaf valashani(McGill University), Francois Barthelat(McGill University)	Jozsef Gabor Kovacs(Budapest University of Technology and Economics), Andras Suplicz(Budapest University of Technology and Economics)			
	Here we present a simple and fast method based on doctor blading to fabricate bio-inspired composites with interesting combination of stiffness, strength and ductility.	The aim of the research was to develop high thermal conductivity materials by using multiple filters. Synergetic effect was found and proved between fillers while the thermal conductivity was doubled.			
16.30			BREAK		

	Room 515	Room 519a	Room 514	Room 524ab	Room 524c
16:30			BREAK		
	MULTI-FUNCTIONAL NANOCOMPOSITES Chairs: Brian George Falzon, Behnam Ashrafi	MULTIFUNCTIONAL COMPOSITES SYMPOSIUM 4 Chairs: Daniel J. Inman, A. John Hart	SYMPOSIUM ON MARINE COMPOSITES 4 Chairs: Romesh Batra, John Philip Dear	FRACTURE AND DAMAGE 4 Chair: Sam Kaddour	FORMING OF ADVANCED COMPOSITES & ENGINEERING FABRICS 4 Chairs: Frank Ko, Youqi Wang
16:50	MULTI-SCALE MODELING OF INTERFACIAL BEHAVIOR OF CNT/POLYMER COMPOSITE BY MD AND CFE METHOD	HIGH PERFORMANCE, ELECTROLYTE-FREE TORSIONAL AND TENSILE CARBON NANOTUBE YARN COMPOSITE MUSCLES	EFFECT OF FOAM CRUSHING IN DOUBLE- CURVATURE SANDWICH PANELS SUBJECTED TO BLAST	EXPERIMENTAL AND NUMERICAL STUDY OF THE MICRO-MECHANICAL FAILURE IN COMPOSITES	USING LS-DYNA TO SIMULATE THE FORMING OF WOVEN-FABRIC REINFORCED COMPOSITES
	Qingsheng Yang(Beijing University of Technology), Xia Liu(Beijing University of Technology)	R. H. Baughman, M. D. Lima, N. Li, M. Jung de andrade, S. Fang, J. Oh, G. Spinks, M. Kozlov, C. S. Haines, D. Suh, J. Foroughi, S. Jeong Kim, Y. Chen, T. Ware, M. Kyoon Shin, L. Dantas Machado, A. F. Fonseca, J. D. w. Madden, W. Voit, D. S. Galvão	Michelle Stephanie Hoo fatt(University of Akron), Dushyanth Sirivolu(University of Akron)	Danial Ashouri vajari(Technical University of Denmark), Karolina Martyniuk(Technical University of Denmark), Bent F Sørensen(Technical University of Denmark), Brian Nyvang Legarth(Technical University of Denmark)	Corey Morris(Advanced Composite Materials and Textile Research Laboratory), Lisa Dangora(University of Massachusetts at Lowell), James A. Sherwood(University of Massachusetts at Lowell)
	A pull-out test of a single CNT embedded within a polymer matrix is simulated by a FEM combined with MD simulation.	Artificial muscles based on carbon nanotube composite yarms are described, which provide ultra-fast, giant-force, large-stroke torsional and tensile actuation and millions of reversible cycles.	This paper presents an analytical model for the blast response of a double-curvature, composite sandwich panel with polymeric foam core.	The interfacial parameters are characterized by comparing the experimental results with the FE analysis. Subsequently, the progressive interfacial damage evolution is studied.	This paper presents how LS-DYNA can be used to investigate how choices in the processing parameters can influence part quality.
17:10	PREPARATION OF GRAPHENE WITH CONTROLLED REDUCTION DEGREE AND STUDY OF ELECTROMAGNETIC PROPERTIES OF THEIR NANOCOMPOSITES	HIGHLY TWISTED DOUBLE-HELIX CARBON NANOTUBE YARNS	DELAMINATION DAMAGE IN LAMINATED SHELLS	MIXED-MODE FRACTURE ANALYSIS OF DELAMINATION USING NON-LINEAR EXTENDED FINITE ELEMENT METHOD	RUBBER PAD FORMING OF GLARE CRUCIFORM USING NUMERICAL AND EXPERIMENTAL ANALYSIS
	Qi Dong(Beihang University), Yan Zhao(Beihang University), Yijun Jiang(COMAC Sadri), Xionggang Shen(Beihang University)	Yuanyuan Shang(Harbin Institute of Technology)	Roberta Massabo(University of Genoa), Francesca Campi(University of Genoa)	Damoon Motamedi(University of British Columbia), Abbas Milani(University of British Columbia)	Ravishankar Subbaramaiah(University of New South Wales), B. gangadhara. Prusty(University of New South Wales), Garth Morgan Kendall Pearce(University of New South Wales), Shen hin Lim(University of New South Wales), Donald Wainwright Kelly(University of New South
	Various reduced graphene oxide were synthesized. The electromagnetic properties of their nanocomposites were studied. Their improvement of properties shows a potential application in nanocomposites.	We show that CNTs can be made into a highly twisted double- helix structure by twist-spinning process. The structure is a stable and hierarchical configuration, which has unique mechanical properties.	An efficient model, based on delamination fracture mechanics and a homogenization to reduce unknowns, is proposed for shells loaded dynamically. Applications highlight the advantages of the approach.	Non-linear Extended Finite Element Method (XFEM) has been employed to model the mixed mode bending test of a UD composite laminate. The model prediction is evaluated using reported experimental data.	Rubber pad formability of fiber metal laminates to develop retrofitable hat-shaped energy absorbing component using numerical analysis and experimental techniques.
17:30	ELECTROMAGNETIC PROPERTIES OF COBALT-REDUCED GRAPHENE OXIDE (CO-RGO)/ EPOXY COMPOSITES	BENDING AND MECHANICAL BEHAVIORS OF CNF/PPY CONDUCTIVE SINGLE-LAYER COMPOSITE MATERIAL	INDENTATION AND PENETRATION LAWS VALIDATED FOR COMPOSITE LAMINATES DIFFERENT IN FIBRES AND MATRIX	INVESTIGATION OF THE FAILURE BEHAVIOR OF SHORT-FIBER-REINFORCED THERMOPLASTICS WITH MOLDED IN HOLES	FORMING OF NONCRIMP FABRIC COMPOSITES WITH EMBEDDED CABLING
	Yan Wang(Beijing University of Aeronautics and Astronautics), Yan Zhao(Beihang University), Yuqin Su(Beihang University), Xiaohua Lu(Tsinghua University)	Cheol Kim(Kyungpook National University)	Valentina Lopresto(University of Naples Federico II), Giancarlo Caprino(University of Naples Federico II), Antonio Langella(University of Naples Federico II)	R. byron Pipes(Purdue University)	Alexander Stefanov Petrov(University of Massachusetts at Lowell), Jennifer L. Gorczyca(University of Massachusetts at Lowell), James A. Sherwood(University of Massachusetts at Lowell), Lisa Dangora(University of Massachusetts at Lowell),
	Adding graphene decorated with cobalt nanoparticles in polymer can enhance both dielectric and magnetic properties of polymer matrix composites at the same time	Single-layer CNF/PPy composite films were fabricated by the electrochemical polymerization process, and their electrical conductivities and bending deformations were measured.	The impact behavior of laminates made of glass fibres in phenolic resin and basalt fibre in epoxy matrix was studied.	Injection molded tensile bars made of glass-fiber-reinforced Polyamide 66 (23% fiber volume fraction) with molded in 4 mm holes were subjected to tensile load in order to study their failure behavior.	A hybrid finite element discrete mesoscopic approach is used to model the forming of composite parts using a unidirectional glass prepreg non-crimp fabric (NCF)with embedded cabling
17:50	EFFECT OF HUMIDITY ON ELECTRICAL CONDUCTIVITY OF CARBON NANOTUBE-MODIFIED EPOXY		MODELLING OF THE DELAMINATION OF LAMINATED GLASS RESISTING BLAST LOADING	EFFECT OF EMBEDMENT LENGTH ON THE PERFORMANCE OF SHEAR-STRENGTHENED RC BEAMS WITH L-SHAPED CFRP PLATES	CONSOLIDATION OF BRAID-BASED CFRP STRUCTURES
	Behnam Ashrafi(National Research Council Canada)		Paolo Del linz(Imperial College of Science), John Philip Dear(Imperial College of Science)	Amir Mofidi(McGill University), Sébastien Thivierge(Ecole de Technologie Superieure), Omar Chaallal(Ecole de Technologie Superieure), Yixin Shao(McGill University)	Martina Bulat(Universitat Stuttgart), Larissa Von wascinski(Universitat Stuttgart), Peter Middendorf(Universitat Stuttgart), Hartmut Roedel(Technische Universitat Dresden)
	The effect of humidity on the electrical conductivity of a CNT- modified epoxy material was examined. It was observed that humidity can significantly influence the conductivity due to moisture ingress.		Composite PVB laminated glass windows minimize the damage and risk of injury during blast events. The after glass cracking delamination process is modeled to improve the understanding of the material.	This paper presents results of an experimental investigation on reinforced concrete (RC) T-beams retrofitted in shear with prefabricated L-shaped carbon fibre-reinforced polymer (CFRP) plates.	Effects of pressurized expandable mandrels on the laminate structure and their properties. Focused on hollow CFRP structures based on braided preforms.
18:10			NON-EXPLOSIVE METHODOLOGY FOR DYNAMIC BLAST LOADING OF WIDE AREA COMPOSITE ARMOR PANELS	PROCESSING EFFECT ON THE DAMAGE TOLERANCE OF RANDOMLY-ORIENTED STRANDS THERMOPLASTIC COMPOSITES	SIMULTANEOUS BINDING AND TOUGHENING CONCEPT FOR TEXTILE REINFORCED IN SITU POLYMERIZED CYCLIC BUTYLENE TERETHPHALATE COMPOSITES
			Daniel Whisler(University of California, San Diego), Hyonny Kim(University of California, San Diego), Ken-an Lou()	Benoit Landry(McGill University), Pascal Hubert(McGill University)	Wangqing Wu(Technische Universitat Clausthal)
			A non-explosive technique for dynamic pulse loading of composite sandwich armor panels has been developed to represent explosive blasts based on impact/momentum transfer principles.	Impact tests were performed on randomly-oriented strands thermoplastic composites. The influence of process-induced defects was measured by comparing low and high pressure processed panels.	A new concept consisting of binding and toughening has been proposed and verified for efficient and qualified manufacturing of textile reinforced pCBT composites.
19:00			RECEPTION		
22:00			End		
-					

	Room 522	Room 518ab	Room 520ad	Room 519b	Room 520c
16:30			BREAK		
	MODELLING AND SIMULATION IV Chairs: Goran Ferlund, Raj Das	LCM 4 - PROCESS MODELING I Chairs: Peter Mitschang, Andreas Endruweit	NATURAL FIBER COMPOSITES 4 Chair: Tri-Dung Ngo	BONDED JOINTS 2 Chairs: Shahram Aivazzadeh, Stéphane Fontaine	TSAI PANEL Chair: Stephen W. Tsai
,	OURE OVOLE MONITORING OF LAMINATED CARRON	MODELING OF NON IGOTHERMAL LIQUID	CARROUNDRATE DERIVED CO. DOLV(LACTIDE) AC	PROPOSAL OF A COLLEGING ZONG MODEL SUITABLE	NEW VALUES IN LAMINATE DESIGN AND
16:50	CURE CYCLE MONTIORING OF LAMINA IED CARBON FIBER-REINFORCED PLASTIC BY FIBER BRAGG GRATINGS IN MICROSTRUCTURED OPTICAL FIBER	MODELING OF NON-ISOT HERMAL LIQUID COMPOSITE MOLDING: THE HEAT DISPERSION ISSUE	CARBOH YDRATE DERIVED CO-POLY(LACTIDE) AS COMPATIBILISER FOR BACTERIAL CELLULOSE REINFORCED POLYLACTIDE NANOCOMPOSITES	FROPOSAL OF A COHESIVE ZORE MODEL SUITABLE FOR THE STUDY OF BONDED JOINTS	NEW VALUES IN LAMINATE DESIGN AND MANUFACTURING
	C.Sonnenfeld, T. Geernaert, S. Sulejmani, H. Thienpont, F. Berghmans (Vrije U. Brussel), G. Luyckx (Ghent U.), F. Collombet, Y.H. Grunevald, B. Douchin, L. Crouzeix, M. Torres(Inst. Clement Ader), K. Chah(U. de Mons), P. Mergo(Maria Curie-Sklodowska U. Lublin),	Pavel Simacek(University of Delaware), Suresh G Advani(University of Delaware)	Koon-yang Lee(Imperial College of Science), Thanit Montrikitiphant(Imperial College of Science), Min Tang(Imperial College of Science), Charlotte Williams(Imperial College of Science), Alexander Bismarck	Azalia Moradi(ONERA), Cedric Huchette(ONERA), Thomas Vandellos(ONERA), Dominique Leguillon(Centre National de la recherche scientifique CNRS)	Stephen W Tsai(Stanford University)
	We use fiber Bragg grating based sensors in microstructured optical fibers and in conventional ones to assess the strain built up in a carbon fiber reinforced polymer material during its manufacturing	The paper addresses the effects of heat dispersion model on modeling of liquid composite molding process, both the predicted temperature field and flow patterns.	This paper describes the use of a novel carbohydrate derived copolylactide as compatibiliser to improve the tensile properties of BC reinforced polylactide nanocomposites.	This work proposes a suitable cohesive zone model taking into account the joint thickness effects. The validity domain of this CZM is defined through a comparison between initiation tests.	A recent invention of bi-angle thin-ply non crimp fabric (NCF), with a trade-name C-Ply, offers values in laminate design and manufacturing beyond these traditional restrictions.
17:10	STUDY ON NEW SURFACE PRETREATMENTS OF PAINTING TO CFRP LAMINATES	PROCESS INDUCED DEFORMATION OF AIRCRAFT STRUCTURAL COMPONENTS	A NEW BIODEGRADABLE BIOPLASTIC TERNARY BLEND AS NEW MATRIX SYSTEM FOR BIOCOMPOSITE USES	A COMPUTATIONAL TOOL FOR THE ANAYSIS AND DESIGN OF STRUCTURAL ADHESIVE JOINTS	RECENT DEVELOPMENTS IN AUTOMATED COMPOSITES MANUFACTURING
	Tomoyuki Suzuki(Aichi Science and Technology Foundation), Hirohito Hira(Daido University)	Paul A Trudeau(Bombardier), Hasan Salek(Bombardier), Marc- andre Jette(Bombardier), Pascal Hubert(McGill University), Cristian Demaria(McGill University), Genevieve Palardy(McGill University)	Kunyu Zhang(University of Guelph), Amar K Mohanty(University of Guelph), Manjusri Misra(University of Guelph)	Konstantinos N. Anyfantis(Technical University of Denmark)	Suong Hoa(Concordia University)
	New surface pretreatment methods of CFRPs were investigated. Ozone exposure and laser irradiation were applicable for the improvement of painting property of polyphenylene sulfide (PPS)/CF laminate.	A curved fuselage C-frame manufactured using RTM has been studied under various curing conditions and the part deformations were measured.	In this work, a entirely biodegradable and renewable ternary blend system were fabricated using as matrix for biomass fiber. The mechanical properties were evaluated in this work.	This work presents the potential of a mixed-mode cohesive model for modeling ductile adhesive joints with similar or dissimilar adherents.	The availability of automated tape layup (ATL) and automated fiber placement (AFP) machines has facilitated many advances in the automation of the manufacturing of composite structures.
17:00	THEORETICAL FAILURE ENVELOPES OF OPEN HOLE	PROCESSING WARPAGE OF ASYMMETRIC	TPI EFFECT ON RESIN IMPREGNATION IN VARTM	INFLUENCE OF IMPACT AND STRAIN RATE ON THE	DEVELOPMENT OF CFRP BODY STRUCTURE FOR
1/.30	COMPOSITE LAMINATES WITH A- AND B-BASIS ALLOWABLES ESTIMATED FROM SMOOTH SPECIMEN PROPERTIES	COMPOSITE PANELS MANUFACTURED BY RESIN TRANSFER MOLDING	AND ITS MECHANICAL PROPERTIES FOR NATURAL FIBER COMPOSITES	RESPONSE OF ADHESIVELY BONDED SINGLE LAP JOINTS	LEXUS LFA AND THE TECHNOLOGY ADVANCEMENT TOWARDS MASS PRODUCTION
	Jeffrey Tsewei Fong, Nathanael Alan Heckert, James Filliben(National Institute of Standards and Technology(NIST)), Carlos Alberto Cimini Jr, Jose daniel Diniz Melo(Universidade Federal do Rio Grande do Norte)	Philippe Causse(Ecole Polytechnique de Montreal), Edu Ruiz(Ecole Polytechnique), François Trochu(Ecole Polytechnique de Montreal)	Junji Noda(Yamaguchi University)	Babak Soltannia(Dalhousie University), Babak Ahmadi moghadam(Dalhousie University), Farid Taheri(Dalhousie University)	Nobuya Kawamura(Toyota Motor Corporation)
	A case study is presented where A-basis and B-basis design allowables failure envelopes for open hole specimens were numerically obtained for a quasi-isotropic carbon fiber-epoxy laminate.	This study uses experimental techniques as well as numerical modeling to investigate the impact of the injection stage on the residual distortion associated with Resin Transfer Molding process.	The purpose of this study is to investigate the effect of TPI of natural fiber yarns on resin impregnation properties and its mechanical properties for natural fiber composite molded by VaRTM.	In this paper the effect of high strain rate on the shear response of single lap joints mating composite adherends, over a loading range of 1-4 m.sec-1 is investigated.	Development of LEXUS LFA began originally with a white aluminum body. Challenge to develop a complete original CFRP car body structure in parallel to the aluminum body from 2004 as a backyard project.
			ELEVIDAL EATICHE PERAVIOUR OF NEW ENGINEERED	A DALEAN TE BASID TEATING DETAILEDS OANDAOUTE	DRACTICAL COLUTIONS TO TRU RADDEDC IN THE
17:50		MULTI-OBJECTIVE INFUSION OPTIMIZATION IN VACUUM ASSISTED RESIN TRANSFER MOULDING (VARTM) USING GENETIC ALGORITHMS	FLEAURAL FAILOUE BEHAVIOUR OF NEW ENGINEERED BIOCOMPOSITES FROM POLY (3-HYDROXYBUTYRATE-CO- HYDROXYVALERATE) (PHBV)/POLY (BUTYLENE ADIPATE-CO- TEREPHTHALATE) (PBAT) BLENDS AND SWITHGRASS	ADHESIVE BOND TESTING BETWEEN COMPOSITE LAMINATES BY LASER SHOCKWAVE LOADING	PRACTICAL SOLUTIONS TO TRE BARKIERS IN THE DEVELOPMENT OF COMPOSITE APPLICATIONS
		Giacomo Struzziero(Cranfield University), Alex Skordos(Cranfield University)	Anh dung Ngô(Ecole de Technologie Superieure), Manjusri Misra, Vidhya Nagarajan (University of Guelph), Amar K Mohanty(University of Guelph), Martin Cardonne, Mohamed Khay(Ecole de technologie supérieure - Université du Québec)	Jean-pierre Monchalin(National Research Council Canada)	Dustin Louis Dequine(Fiberforge Corporation)
		Optimization, using Genetic algorithms, of gate location and temperature profile for non-isothermal filling, in order to minimize filling time and final degree of cure	The addition of 0.75 parts by weight compatibilizer, poly diphenylmethane diisocyanate (pMDU), improved flexural static and fatigue strength of PHBV-PBAT blend with 30 wt% switchgrass biocomposite	On-going developments at NRC of a bond strength proof testing technique based the generation with a high energy laser of a tensile shockwave that could pry apart weak bonds will be presented.	This paper examines the primary issues causing the invisible TRL barriers from an industry perspective and provides highly practical solutions to overcome them.
18:10		INDUSTRIAL SIMULATION OF LIQUID RESIN INFUSION BY THE FINITE ELEMENT METHOD	STUDY OF THE REPROCESSING EFFECTS ON THE BEHAVIOR OF THE PVC/ALFA COMPOSITES COMPATIBILIZED WITH PVC-G-MA	DESIGN AND VALIDATION OF THE PRIMARY STRUCTURE AND BONDED JOINTS FOR THE NEXT GENERATION LARGE CANADARM TESTBED	
		Arnaud Dereims(Ecole Nationale Superieure des Mines de St- Etienne), Sylvain Drapier(Ecole Nationale Superieure des Mines de St Etienne), Jean-michel Bergheau(Ecole Nationale d'Ingenieurs de Saint-Etienne), Patrick De luca() An advanced and robust modeling method, coupling fluid flows with porous mechanics, in order to anticipate infusion time and	Amar Boukerrou(Universite de Bejaia), Dalila Hammiche(Universite de Bejaia), Alain Bourmaud(Universite de Bretagne Sud), Hocine Dijdelli(Universite de Bejaia), Yves Grohens(Universite de Bretagne Sud) This work aims to study the reprocessing effects on alfa fiber reinforced polyvinylchloride (PVC/alfa) composites with and	Peter P. Krimbalis(MDA Corporation), Drazen Djokic(National Research Council Canada), Gavin Scott Hay(MDA Corporation), Rick Cole(National Research Council Canada) This paper focuses on the design, analysis and validation of the primary structural elements and adhesive bonded joints	
		tnickness variation during infusion and post-infusion, is presented.	without PVC-g-MA used as compatibilizer.	empioyed in the Next Generation Large Canadarm (NGLC).	
19:00			RECEPTION		
22:00			End		

	Room 525	Room 520f	Room 520be		Room 516ab
16:30			BREAK		
	BIOCOMPOSITES 2 Chairs: David Jesson, Hao Wang	CHARACTERIZATION 3 Chairs: Jens Schuster, Rudi Velthuis	GREEN COMPOSITES 4 Chairs: Larry Lessard, Johanne Denault		BIO & GREEN III - POSTER Chairs: Michael Richard Kessler, Sean McKay
16:50	STRUCTURAL QUALITY BIOCOMPOSITES OF TREATED FLAX FIBER WITH EPOXIDIZED SUCROSE SOYATE RESIN	EFFECTIVE PROPERTIES FOR FIBER COMPOSITES WITH RHOMBIC PATTERN AND IMPERFECT INTERFACE	COMPOSITE RECYCLING: CHARACTERIZATION OF AN END OF LIFE WIND TURBINE BLADE	16:50	BLENDING OF POLY(LACTIC ACID) AND ACRYLONITRILE BUTADIENE STYRENE FOR USE AS BIO- COMPOSITE MATRIX
					Ryan Vadori, Amar K Mohanty, Manjusri Misra
	Christopher Taylor(North Dakota State University), Taylor Krosbakken(North Dakota State University), Chad A Ulven(North Dakota State University), Adlina paramarta(North Dakota State University), Dean Webster/McNeth Dakota State University)	Harald Berger(Otto-von-Guericke Universitat Magdeburg)	Justine Beauson(Technical University of Denmark), Jakob Ilsted Bech(Technical University of Denmark), Povl Brøndsted(Technical University of Denmark)	16:54	POLY(3(HYDROXYBUTYRATE-CO-3)HYDROXYVALERATE) / CLAY NANOCOMPOSITES FOR PACKAGING APPLICATIONS Emisti Efferment Palmer Paure Luis Parel
	Biocomposites composed of flax fiber and epoxidized sucrose soyate resin or synthetic epoxy resin were processed and	A numerical homogenization approach is presented to calculate effective properties for fiber composites with rhombic fiber	Wind turbine blades mainly made of composite do not have any end of life solution and are therefore disposed of landfill. This	16:58	MECHANICAL PROPERTIES OF NATURAL FIBERS REINFORCED POLY(LACTIC ACID) BASED COMPOSITES
	characterized. Improved performance was obtained with the new biobased resin.	arrangement. The model includes imperfect contact between the phases.	issue is nowadays problematic and solutions are needed.		Putinun Uawongsuwan, Narongchai O-charoen, Hiroyuki Hamada
-	ITH IZATION OF FLAX FIBERS AND GLASS FIBERS	CONDUCTIVITY AND DIFLECTRIC RESPONSE OF	INVESTIGATING THE FLEXURAL PROPERTIES OF	17:02	COMPATIBILIZATION OF POLYLACTIDE-BASED FLAX FIBER BIOCOMPOSITES
17:10	IN A BIO-BASED RESIN	CARBON-BASED COMPOSITES IN A BROAD	BAMBOO FIBRE - PP COMPOSITES CONSOLIDATED	17:06	CASTOR OIL BASED BIO-URETHANE NANOCOMPOSITES
		FREQUENCI RANGE	UNDER INERT ATMOSPHERE	,	Ji hoon Yu, Jae hong Go, Jin-san Yoon, In kyung kim, Kyurin Kim, Eun-ju Lee, Eun-soo Park
	Nassibeh Hosseini(North Dakota State University), Chad A Ulven(North Dakota State University), Dean Webster(North Dalats October University)	Dmitry Nuzhnyy(Academy of Sciences)	Eduardo Trujillo, Jan Vertommen, Lina Osorio, Aart Willem Van vuure, Jan Ivens, Ignaas Verpoest (Katholieke Universiteit	17:10	PLASTICIZATION OF CO-PRODUCTS FROM BIOETHANOL INDUSTRIES; POTENTIAL USES IN BIOCOMPOSITES
	Dakota State University)		Leuven		Rajendran Muthuraj, Manjusri Misra, Amar K Mohanty
	A biobased polyurethane was reinforced with flax fiber and tested against a comparable fiberglass reinforced polyurethane.	Conductivity and dielectric response of dielectric - conductor composites (multiwalled carbon nanotubes-polyethylene	UD bamboo fibre – PP composites were produced at different temperatures under different environments to characterize the	17:14	USING FACTORIAL STATISTICAL METHOD FOR OPTIMIZING CO-INJECTED BIOCHAR COMPOSITES
	Certain mechanical and thermal property results were shown to	terephthalate, alumina-carbon nanofibers) were studied around	effect of thermal degradation on properties during the		A FACTORIAL DESIGN OF DISTILLERS' GRAINS BASED BIOCOMPOSITES: A PATH TO SUSTAINABILITY OF
	be equivalent.	percolation threshold	manufacturing process	17:18	CORN ETHANOL
17:30	THERMAL PROPERTIES AND STABILITY OF PET- HEMP EIBERS COMPOSITES	CORRELATION OF TRANSDUCER FREQUENCY AND SIGNAL /NOISE BATIO OF THIN WALLED FILAMENT	A COMPLETE MICROSTRUCTURAL AND MECHANICAL CHARACTERIZATION OF RAMBOO		Nima Zarrinbakhsh, Fantahun M Defersha, Amar K Mohanty, Manjusri Misra
		WOUND CFRP-TUBES INSPECTED BY ULTRASONICS	TECHNICAL AND ELEMENTARY FIBERS	17:22	RECYCLING OF MARKET CFRP/CFRTP WASTE FOR MASS PRODUCTION APPLICATION Haowen Wei, Tatsuro Akiyama, Hooseok Lee, Masachika Yamane, Jun Takahashi, Isamu Ohsawa, Tetsuhiko Murakami,
	Aimé sylvain Fotso Talla(University of Quebec at Chicoutimi), Francois Godard(University of Quebec Abitibi- Temiscamingue), Fouad Erchiqui(University of Quebec at Chicoutimi)	Jens Schuster(Fachhochschule Kaiserslautern)	Lina Osorio, Eduardo Trujillo, Frederic Lens(University of Leiden), Jan Ivens, Aart Willem Van vuure, Ignaas Verpoest (Katholieke Universiteit Leuven)		и и ,
	PET-Hemp fibers (1%, 5%, 10%, 15%, and 20%) were compounded at 240°C, 250°C, and 260°C and the impact of fibers load and mixing temperature evaluated	The paper describes a technique to inspects thin walled tubes for aircrafts by ultrasonics and the evaluation of properties such as signal/noise ratio, frequency, and defects size.	The microstructure of bamboo fibers has been characterized to understand both the mechanical behavior of the technical fibers as well as to predict the mechanical properties of the elementary fibers.		
17:50	CURE AND THERMO-MECHANICAL CHARACTERISTICS OF BIO-BASED POLYESTER COMPOSITES USING HYDROPEROXIDE INITIATORS	3D DIC MEASUREMENT OF TUBULAR BRAIDED COMPOSITES	INVESTIGATION OF STRENGTH RECOVERY OF RECYCLED HEAT TREATED GLASS FIBRES THROUGH CHEMICAL TREATMENTS		
	Eldon Triggs(Tuskegee University), Michael Wells(), Mahesh Hosur(Tuskegee University), Alfred Tcherbi-narteh(Tuskegee University), Shaik Jeelani(Tuskegee University)	Garrett W Melenka(University of Alberta), David S Nobes(University of Alberta), Jason P Carey(University of Alberta)	Eduardo Saez Rodriguez(University of Strathclyde), James Thomason(University of Strathclyde), Liu Yang(University of Strathclyde)		
	The use of 15-300 ⁷³ initiator will allow the better control of component thermo-mechanical properties and further increase the service life of natural fiber composites.	Tabular braid composites are manufactured in open or closed mesh configurations. A new 3D DIC method was developed to measure the circumferential strain distribution of tubular braided composites.	The study reports on the strength of thermally treated commercial glass fibres after acid treatment and silanization of the fibre surface.		
18:10	EFFECT OF FIBRE TREATMENTS ON WATER ABSORPTION AND TENSILE PROPERTIES OF FLAX/TANNIN COMPOSITES	THERMAL STRESSES IN FIBER REINFORCED COMPOSITES	RECYCLING OF HIGH PERFORMANCE THERMOPLASTIC COMPOSITES WITH HIGH VOLTAGE FRAGMENTATION		
	James Njuguna(Cranfield University), Jinchun Zhu(Cranfield University)	George Zhenghong Zhu(York University), Shen Gong(York University)	Clemens Dransfeld(University of Applied Sciences and Arts Northwestern Switzerland), Maxime Roux(University of Applied Sciences and Arts Northwestern Switzerland), Nicolas Eguemann(Cross Composite AG), Lian Giger(Cross Composite AG)		
	The investigation shows the effects of flibre treatments on water absorption and tensile properties of flax/tannin biocomposites, which could offer environmental benfits in vehicel applications.	This paper investigates the interfacial thermal stresses in fiber reinforced composites. Analysis results show that there is an optimal thermo-elastic mismatch of fiber and matrix.	It could be demonstrated that high voltage fragmentation is a suitable method for recycling of carbon fibre reinforced thermoplastic polymers from cradle to cradle.		
10:00		l	RECEPTION		1
22:00			End		

	Room 515	Room 519a	Room 514	Room 524ab	Room 524c
7:30 8:30		PLENA	RY (Room 710) - Ludwik Leibler: " Vit	rimers".	
	CNT NANOCOMPOSITES 1 Chairs: Brian Wardle, Daniel Theriault	MULTIFUNCTIONAL COMPOSITES SYMPOSIUM 5 Chair: Yong Chen	SYMPOSIUM ON MARINE COMPOSITES 5 Chairs: Yasushi Miyano, Dayakar Penumadu	FRACTURE AND DAMAGE 5 Chair: Erian Armanios	TEXTILE COMPOSITES 1 Chairs: Prasad Potluri, Stepan V. Lomov
9:30	FABRICATION AND MECHANICAL PROPERTIES OF CARBON NANOTUBE COMPOSITE MICROTRUSSES	INTEGRATION OF LINEAR THERMOELECTRIC MODULES COMPOSED OF LOW AND INTERMEDIATE TEMPERATURE P- AND N-TYPE METALLIC SEMICONDUCTORS INTO COMBUSTION CHAMBER	EFFECT OF SEA WATER CONFINEMENT ON CYCLIC FATIGUE BEHAVIOR OF MARINE COMPOSITES	DUCTILE STEEL FIBER/EPOXY COMPOSITES WITH MODIFIED ADHESION	TOWARDS REALISTIC GEOMETRIC MODELING OF WOVEN FABRICS
	Sei jin Park, Anna Christine Brieland-shoultz, A. john Hart(University of Michigan - Ann Arbor), Matthew R. Maschmann, Jeffery W. Baur(Air Force Research Laboratory), Sameh H. Tawfick(Massachusetts Institute of Technology), Michael De volder	Minoru Taya(University of Washington)	Akawut Siriruk(University of Tennessee - Knoxville), Dayakar Penumadu(University of Tennessee - Knoxville)	Michaël Guy Callens, Larissa Gorbatikh, Ellen Bertels, Bart Goderis, Mario Smet, Ignaas Verpoest (Katholieke Universiteit Leuven)	Guillaume Coućgnat(Universite Bordeaux I), Hichem Ayadi(Universite Bordeaux I), Clément Saurat(Universite Bordeaux I), Eric Rohmer(Universite Bordeaux I)
	Novel micro-scale CNT trusses are fabricated by a spatially modulated growth process, and infiltrated with ceramic, enabling wide-range tuning of their deformation mechanism and mechanical properties.	This paper is aimed at design of integrated TEG made of light weight and low cost materials into combustion chamber	Sea water confinement effect on the cyclic fatigue behavior of matrix dominated carbon fiber/vinyl ester facings are evaluated in term of numbers of cycles to failure and tangent modulus degradation.	Annealed stainless steel fibres combine both a high stiffness and a high strain-to-failure. The research goal is to understand the mechanical behaviour as a function of the fiber/polymer adhesion.	This paper proposes a numerical relaxation-based simulation procedure to obtain a realistic geometric model of woven fabrics from an initial idealized description.
9:50	THE STUDY OF METHYL METHACRYLATE HARDENED HYBRID POPLAR WOOD	PROCESS-STRUCTURE-PROPERTY RELATIONSHIP FOR ORGANIC SEMICONDUCTORS GROWN BY ORGANIC VAPOR JET PRINTING	EFFECT OF WATER ABSORPTION ON TIME- TEMPERATURE DEPENDENT STRENGTH OF UNIDIRECTIONAL CFRP	MIXED MODE THROUGH THICKNESS FRACTURE OF POLYMER MATRIX COMPOSITE	DRAPEABILITY OF GLASS AND STEEL FIBRES KNITTED FABRICS
	Weidan Ding(University of Quebec Abitibi-Temiscamingue), Ahmed Koubaa(University of Quebec Abitibi-Temiscamingue), Abdelkader Chaala()	Olga Shalev(University of Michigan - Ann Arbor), Max Shtein(University of Michigan - Ann Arbor), Shaurjo Biswas(University of Michigan - Ann Arbor)	Yasushi Miyano(Kanazawa Institute of Technology), Syuhei Hara(Kanazawa Institute of Technology), Masayuki Nakada(Kanazawa Institute of Technology)	Jamal Jamali(University of Western Ontario), Jeff Wood(University of Western Ontario)	Marcin Barburski(Technical University of Lodz), Stepan V. Lomov(Katholieke Universiteit Leuven), Kristof Vanclooster(Toray Industries Inc.), Ignaas Verpoest(Katholieke Iniversiteit Leuven)
	Six-year-old hybrid poplar woods were impregnated with methyl methacrylate (MAA). The Physical, mechanical and surface properties of control and MMA-hardened woods were investigated.	We review the requirements for small molecular organic materials and relate them to processing methods, outlining the properties of materials critical to achieving control over the deposition process.	Our developed accelerated testing methodology is applied to discussing of the effect of water absorption on the strengths of CFRP.	The propagation of a through-thickness crack in a UD composite subjected to mixed mode loading was studied using the CTS geometry in order to assess the associated crack propagation energy.	The aim of the work is analysis the drapeability of glass and steel fibres knitted fabrics cover to the two moulds. Full-field strain measurement is performed using 3D DIC measurements
10:10	INTERLAMINAR SHEAR STRENGTH OF C-SIC BASED COMPOSITES REINFORCED WITH HEAT TREATED C FIBERS	ELECTROMECHANICAL CHARACTERIZATION OF BARIUM TITANATE COATED CARBON FIBERS	EFFECT OF COMBINED ENVIRONMENTS ON THE FATIGUE OF CARBON FIBER-VINYLESTER COMPOSITES	STACKING SEQUENCE EFFECTS IN OVER-HEIGHT COMPACT TENSION TESTS OF QUASI-ISOTROPIC LAMINATES	MECHANICAL BEHAVIOUR OF 3D WOVEN COMPOSITES UNDER TENSION, COMPRESSION AND BENDING
	Jixiang Dai(Dalian University of Technology), Zhiqiang Wei(Dalian University of Technology), Jian Li(Dalian University of Technology), Zhaofu Zhang Dalian University of Technology), Jianjun Sha(Dalian University of Technology)	Christopher Bowland(University of Florida), Zhi Zhou(University of Florida), Henry Sodano(University of Florida)	Chad S. Korach(State University of New York at Stony Brook), Arash Afshar(State University of New York at Stony Brook), Heng tseng Liao(State University of New York at Stony Brook), Pu-pen Chiang(State University of New York at Stony Brook)	Xiaodong Xu, Michael R Wisnom, Stephen Richard Hallett(University of Bristol), Navid Zobeiry, Steven A Leslie, Anoush Poursartip, Reza Vaziri (University of British Columbia)	Shuo Dai(Loughborough University), Paul Cunningham(Loughborough University), Simon Marshall(), Christopher Silva()
	The present investigation reveals the the interlaminar shear strength of 2D (C-SiC composites increased with increasing the heat treatment temperature of C fibers.	Barium titanate grown on carbon fiber using a novel growth process will be characterized to determine the electromechanical properties of the multifunctional fiber.	Effects of cyclic loading on carbon fiber-reinforced vinylester composites after combined UV and moisture exposures is determined by modulus changes and post-loading three-point bending.	In the present paper, quasi-isotropic OCT specimens with different stacking sequences were tested. An FE method using interface elements was applied to understand the damage pattern.	This paper presents the elastic and strength properties of the gD woven composities under tension compression and hending together with a discussion of the predominant failure mode.
10:30	REAGGLOMERATION OF CARBON NANOTUBES DURING PROCESSING OF EPOXY NANOCOMPOSITES	LAYER-BY LAYER ASSEMBLED MULTIFUNCTIONAL COMPOSITES	EXPERIMENTAL INVESTIGATION OF THE EFFECT OF UV RADIATION AND SALT WATER ON THE DYNAMIC PROPERTIES AND FAILURE OF CARBON FIBER- VINVLESTER COMPOSITES	STRESS CONTOUR UTILIZATION FOR ESTIMATING INTERFACIAL PROPERTIES OF FIBER/MATRIX COMPOSITE	MODELLING EFFECTS OF GEOMETRIC VARIABILITY ON MECHANICAL PROPERTIES OF 2D TEXTILE COMPOSITES
	Mostafa Yourdkhani(McGill University), Pascal Hubert(McGill University)	Nicholas A. Kotov, Jian Zhu	Maen Alkhader(State University of New York at Stony Brook), Chad S. Korach(State University of New York at Stony Brook), Fu-pen Chiang(State University of New York at Stony Brook)	Bentang Arief Budiman(Tokyo Institute of Technology), Kosuke Takahashi(Tokyo Institute of Technology), Kazuaki Inaba(Tokyo Institute of Technology), Kikuo Kishimoto(Tokyo Institute of Technology)	Mikhail Matveev(University of Nottingham), Andrew C Long(University of Nottingham), Ivor Arthur Jones(University of Nottingham), Guan Lu(First Aircraft institute, AVIC)
	Dispersion stability of carbon nanotubes in an epoxy resin is investigated. Rheological measurements and hot stage microscopy are used to study the reagglomeration of nanotubes during cure cycle.	Layer-by-layer assembled (LBL) composites present exceptional mechanical properties for many components. The current status and the future outlook of multifunctional LBL composites will be presented.	This work aims to quantify the effect of extended exposure to UV radiation and salt water on the high-strain-rate properties and dynamic failure of carbon fiber-reinforced vinylester composites	The estimation of interfacial properties was proposed by comparing stress contour of simulation and experiment. Characteristic lengths on stress contour were found to aid in estimating them.	Variability of yam path was experimentally studied with micro- CT. Statistically equivalent model was generated. The results of numerical mechanical analysis were compared with experimental results.
10:50			BREAK		

	Room 522	Room 518ab	Room 710	Room 519b	Room 520c
7:30 8:20					
0.30		PLENA	RY (Room 710) - Ludwik Leibler: " Vit	rimers".	
					Chair: Tsu-Wei Chou
	MODELLING AND SIMULATION V Chairs: Stephen Richard Hallett, Silvestre T, Pinho	Chairs: Veronique Michaud, Edu Ruiz	Chairs: Johanne Denault, Asami Nakai	Chairs: Marino Quaresimin, Masahiro Arai	MULTI-FUNCTIONAL SMART COMPOSITES I
		· · · · · · · · · · · · · · · · · · ·	· · · · · · · · · · · · · · · · · · ·		Chairs: Edris Hassan, Alex L. Kalamkarov
9:30	A PARTITION-OF-UNITY METHOD FOR MODELING	MONITORING AND SIMULATION OF THE VACUUM	INTRODUCTION OF SOCIETY OF	STATIC AND FATIGUE PROPERTY OF MODE I CRACK	CHARACTERIZATION OF MULTI-FUNCTIONAL
	COUPLED THERMO-MECHANICAL PROBLEMS IN FRP LAMINATES SUBJECTED TO IMPACT	INFUSION PROCESS	AUTOMOTIVE COMPOSITES JAPAN - A NEW WAVE OF COMPOSITES FOR	ON CFRP LAMINATE TOUGHENED WITH CNF INTERLAYER	COMPOSITES WITH PRINTED PRESSURE SENSORS
	Awais Ahmed(Delft University of Technology), Lambertus	Alper Aktas(University of Southampton), Stephen	AUTOMOBILE INDUSTRY	Masahiro Arai(Shinshu University), Marino	Dominik Krumm(Chemnitz University of Technology), Marko
	Johannes Sluys(Delft University of Technology)	Boyd(University of Southampton), Ajit Shenoi(University of Southampton)	Hiroyuki Hamada	Quaresimin(University of Padua), Masaki Hojo(Kyoto	Illing(Chemnitz University of Technology), Stephan
		Southampton)	(Kyoto Institute of Technology)	University)	odenwald(cheminiz oniversity of reciniology)
	A fully coupled thermomechanical model is presented for the	A vacuum infusion process monitoring methodology	Asami Nakai	The static and fatigue crack property of mode I crack was	The objective of this study is to characterize the mechanical
	to model discontinuities in displacement, temperature and heat	infusion process were studied for an unsaturated polyester resin	(Gitti University)	investigated with CFRP beam. It was shown that CNF interlayer increase the fracture toughness of the CFRP as compared with	reinforced polymers and printed pressure sensors.
	flux fields	system.	In the automobile industry, weight saving of car	CFRP laminates.	
	MULTICCALE MODEL DAGED ON A EDUTE	DEDMEADITING ANALWEIGAT MODELING OF AD	Composite materials as represented by CEPP have	VEDVINCH OVOLE FATIOUE OF FIDDE DEINFORGED	IN SITU MONITORING OF NANORARTICI F
9:50	FRACTURE APPROACH FOR THE PREDICTION ON	INTERLOCK FABRICS	been expected to be used instead of metal	COMPOSITES: AN ALTERNATIVE EXPERIMENTAL	FILTRATION IN CARBON NANOMATERIAL/GLASS
	DAMAGE IN LAMINATE COMPOSITES		parts.	APPROACH	FIBER/ POLYESTER MULTISCALE COMPOSITES
	Nicolas Carrere(École Nationale Supérieure de Techniques	Nicolas Vernet(Ecole Polytechnique de Montreal), François		Till Julian Adam(Technische Universitat Carolo-Wilhelmina	Joel renaud Ngouanom Gnidakouong, Young Bin Park, Myungsoo Kim,
	Avancés, Bretagne), Nicolas Tual(Ecole Nationale Superieur des	Trochu(Ecole Polytechnique de Montreal)		Braunschweig), Peter Horst(Technische Universitat Carolo-	Hyung Wook Park, Ho soon jeong, Young bok Jung, Kyungsik han, Sung Kyu ahn (Ulsan National Institute of Science and Technology)
	Diakhaté(Universite de Bretagne Occidentale)			wiineimina Braunschweig)	Joung-man Park(Gyeongsang National University)
	TThe aim of this paper is to propose a model to describe the	The aim of this work is to determine a model to predict the		The vhcf of frp has not been sufficiently investigated yet. Thus, a	In situ resistance monitoring as a non-destructive method
	progressive damage to the failure in laminated composites. This model is based on a finite fracture mechanis approach.	permeabilities are compared to the calculated values.		fatigue of cross ply laminates is analyzed up to 1E+8 cycles.	were used to evaluate the flow of nanofiller suspensions in the
		-			porous media.
10/10	THIN PLY COMPOSITES: EXPERIMENTAL	A SIMULATION-BASED METHOD OF PERMEABILITY	STIFFNESS PREDICTION IN GREEN COMPOSITES	ENHANCED FATIGUE TESTING OF COMPOSITES	PIEZORESISTANCE CHARACTERIZATION OF PVDF-
10:10	CHARACTERIZATION AND MODELING	PREDICTION FOR RTM PROCESS SIMULATION	USING HOMOGENIZATION TECHNIQUES		MWNT NANOCOMPOSITES
	Joël Cugnoni(École polytechnique fédérale de Lausanne),	Christoph Hahn(Technische Universitat Munchen), Christophe	Asghar Arab(Universitat des Saarlandes), Markus	Peter Bradby spiros Bailey(Instron), Christian Hoehl(Instron),	Reza Rizvi(University of Toronto), Hani E Naguib(University of
	Robin Amacher(École polytechnique fédérale de Lausanne), John Botsis(Ecole Polytechnique Federal de Lausanne)	Binetruy(Ecole Centrale de Nantes), Roland	Stommel(Universitat des Saarlandes), Lennart Wallström(Lulea University of Technology), Janis Varna(Lulea	Payam Jamshidi(University of Manchester), Steve	Toronto)
	sonn botsis(Ecole Folyteeninghe Federal de Eausanne)	millemotiza (recimisene oniversität munchen)	University of Technology)	oquires(instron), Andrew o onital(instron)	
	In this work, the performance improvement brought by ultra- thin ply composites is demonstrated experimentally and	This paper presents an approach to predict permeability numerically for carbon fiber fabrics. The most important benefit	Homogenization techniques has been used to predict the mechanical properties of the green composites considering the	A novel control method for composites fatigue is presented.	This study investigates the effect of MWNT concentration on the
	explained using 3D meso-scale FE modeling of damage	is the speed-up compared to experimental testing.	fiber length distribution in composite.	specimen heating, offering improved repeatability and increased	Flouride-MWNT (PVDF-MWNT) composites prepared by high
	progression.			test throughput.	shear melt mixing.
10.20	AN INTEGRATED XFEM-CE APPROACH FOR	A STUDY OF THE QUALITY OF COMPLEX PARTS	NANOCRYTALLINE CELLULOSE-LIGNIN CARBON	INFLUENCE OF GLASS TRANSITION TEMPERATURE	NANOINDENTATION RESPONSE OF PIEZOELECTRIC
10.00	MODELING MATRIX CRACKS AND DELAMINATION	MADE USING THE MOULDLESS VARTM METHOD	NANOFIBRES	OF THERMOPLASTIC AND THERMOSET LAMINATES	COMPOSITE MATERIALS
	ANGLED PLIES			ON THEIR FATIGUE BEHAVIOR	
	Xiushan Sun(National University of Singapore), Vincent Bc	Chris Larose Polowick(Carleton University)	Yingjie Li(University of British Columbia), Li-ting	William Albouy(INSA Rouen), Benoit Vieille(INSA Rouen),	Guang Cheng(State University of New York at Stony Brook),
	Ian(National University of Singapore), Iong earn Tay(National University of Singapore)		British Columbia), Frank Ko(University of British Columbia)	Lakndar Taleb(INSA Rouen)	1.a. Venkatesn(State University of New York at Stony Brook)
	finite element method (XFEM) and cohesive elements (CEs) for	voids and thickness variation found in three-dimensional	emulsion-electrospinning and carbonization. With emulsion	About the influence of glass transition temperature of woven-ply Epoxy- and PPS-based composites on their high-temperature	characterizing the electromechanical properties of piezoelectric
	delamination crack interactions.	components that have been manufactured using the VARTM	electrospinning, the hydrophilic NCC was encapsulated by the	fatigue behavior: angle-ply and quasi-isotropic laminates	composite materials through the nanoindentation method is
		metnoa.	nyaropnotic iignin phase.		aevelopea.
10:50		1	BREAK	1	1
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	Room 525	Room 520f	Room 520be		Room 516ab
7:30					
0.30		PL	Vitrime	rs". Chair: Tsu-Wei Chou	
	STRUCTURAL RESPONSE & DESIGN		LIFE CYCLE ANALYSIS & RELIABILITY		TESTING - POSTER
	Chair: Guijun Xian		Chair: Christopher Hansen		Chairs: Mehdi Hojjati, Jihua Chen
9:30	UNEXPECTED TWISTING CURVATURE GENERATION OF BISTABLE CFRP LAMINATE DUE TO THE		REDUCING USE OF STYRENE MONOMERS IN UNSATURATED POLYESTER RESINS	9:30	COMPARISON OF CONSOLIDATED COMPOSITES USING MECHANICAL TESTING AND A MULTI-CRITERIA DECISION MAKING TECHNIQUE UNDER VARIABLE MATERIAL PROPERTIES
	UNCERTAINTY OF LAY-UP SEQUENCE AND NEGATIVE INITIAL CURVATURE				Jeremy Leung, Melissa Heinrick, Abbas Milani
	Junghyun Ryu(Seoul National University), Jong-gu Lee(Seoul		Christopher Hansen(University of Massachusetts at Lowell),	9:34	SPIN TEST OF THE DISK MADE OF CARBON FIBER REINFORCED THREE-DIMENSIONAL COMPOSITES
	National University), Seung-won Kim(Seoul National University), Kyu-iin Cho(Seoul National University), Maenghyo		Richard A Poillucci(University of Massachusetts at Lowell)		Yuichi Nagura, Noboru Hiroshima, Hiroshi Hatta, Ken Goto, Yasuo Kogo
	Cho(Seoul National University)			9:38	STIMULUS RESPONSE POLYMER AND MULTIFUNCTIONAL COMPOSITES: CHALLENGES AND PROSPECTS
	The reasons of the tilting behavior of bistable CFRP cross-ply laminate are presented. We modify the strain energy function by introducing the additional constraint force and moment		Alternative vinyl- and allyl-based monomers are explored to replace styrene monomer in unsaturated polyester resins. A ranid microfluidic screening technique is used to sneed		Volodymyr Hutsaylyuk, Heorhiy Sulym, Iaroslav Pasternak, Igor Turchyn
	balance equation		monomer identification.	9:42	DEGRADATION AND DEFORMATION OF CARBON PHENOLIC ABLATOR UNDER ELEVATED TEMPERATURE PROCESSES
9:50	POST-BUCKLING OF DYNAMICALLY LOADED		QUANTIFICATION OF SOURCES OF VARIABILITY IN		Kohei Fukuda, Yuuki Kubota, Hiroshi Hatta, Yasuo Kogo, Kenichi Hirai, Walter Krenkel, Nico Langhof
	COMPOSITE PANELS USING A REDUCED ORDER MODEL		CRFP PLATES CURED IN AUTOCLAVE	9:46	MECHANICAL BEHAVIOUR OF GLASS FIBRE-REINFORCED POLYMER THIN RODS
					Daxu Zhang, Xiaoyan Wang, Wujun Chen, Fujun Peng, Jinghai Gong, Guozhi Qiu
	Eelco Jansen(Universitat Hannover), Tanvir Rahman(TNO DIANA BV), Alexander Meurer(Universitat Hannover).		Yves Angel Davila(Institut Clément Ader), Laurent Crouzeix(Institut Clément Ader), Bernard, Douchin(Institut	9:50	STUDY OF ELECTROMAGNETIC SHIELD EFFECT OF THE METAL-PLATED CARBON FIBER COMPOSITE
	Raimund Rolfes(Universitat Hannover)		Clément Ader), Francis Collombet(Institut Clément Ader), Yves-		Mee-nye On RENDING STIFFNESS REHAVIOR OF THICK-WALLED COMPOSITE TURES
	A multi-mode reduced order approach for finite element		henri Grunevald() A variability study on CFRP plates cured in autoclaye in which	9:54	Mohamed El-geuchy, Suong Hoa, Fariad Shadmehri
	analysis of buckling under dynamic loading is presented. The		the following sources are measured: ply thickness, ply	0.28	ON THE ANALYSIS OF A CONTACT FRICTION COMPOSITE-TO-METAL JOINT
	compressive loading.		orientation, etc.	5.50	Andrei Costache, Konstantinos N. Anyfantis, Christian Berggreen
				10:02	ADHESIVE STRAIN MEASUREMENT IN PATCH REPAIRED CFRP LAMINATE USING 2D DIC
10:10	A COMPARISON OF CURRENT DESIGN CONCEPTS OF		SHADES OF GREEN: PRELIMINARY LCA OF BIOPASED BOLYMER BESINS FOR COMPOSITE		Mohammad Kashfuddoja, Ramji Manoharan
	CONDITIONS		MATERIALS	10:06	LUMINESCENT METHOD OF ASSESSING THE STRUCTURAL MODIFICATIONS OF POLYMER MATRICES Svetlana Karitskaya
	Xiao Cai(Concordia University), Franck Dervault(Borland Software Corporation), Suong Hoa(Concordia University),		Jonathon Chard(University of Surrey), Lauren Basson(University of Surrey), Gavin Creech(Scott Bader	10:10	MICROSTRUCTURE AND MECHANICAL BEHAVIORS OF THICK-WALLED JOURNAL BEARING GFRP RINGS
	Ramin Sedagnati(Concordia University)		Company Ltd.), David Jesson(University of Surrey), Paul A Smith(University of Surrey)		Sergei Borisovich Sapozhnikov, Alexandr Viktorovich Bezmelnitsyn, Radii Sergeevich Zinoviev
	This paper presents a side-by-side comparison of most design		Multistage LCA for batch produced resin systems, tested on a	10:14	SURFACE STRESS EFFECT IN THIN FILMS WITH NANOSCALE ROUGHNESS
	the aerospace industry with a main function of structural		"sustainable" version of the same resin system.		Mikhail Grekov, Sergey Kostyrko
	weight.			10:18	BLOCK COPOLYMERS ORGANIZATION AT INTERFACE
	EXTENDED FINITE ELEMENT METHOD MODELING				Diane Fischer, Sophie Bistac, Maurice Brogly
10:30	OF CRACK PATHS IN PARTICLE REINFORCED COMPOSITES			10:22	Eichi Hara
	Li MA, Zhi-Yong WANG, Lin-Zhi WU (Harbin Institute of Technology)				
	An improved extended FEM which only the straightforward enrichment functions for material interfaces and crack surface are adopted to simulate the fracture behavior of particle reinforced composites.				
10.20			BREAK		

	Room 515	Room 519a	Room 514	Room 710	Room 524c
10:50			BREAK		
-	CNT NANOCOMPOSITES 2 Chairs: Brian Wardle, Daniel Theriault	MULTIFUNCTIONAL COMPOSITES SYMPOSIUM 6 Chairs: Max Shtein, Scott White	SYMPOSIUM ON MARINE COMPOSITES 6 Chairs: Young W. Kwon, Mark Battley	FRACTURE AND DAMAGE 6 Chairs: Reza Vaziri, Chandra Veer Singh	TEXTILE COMPOSITES 2 Chairs: Prasad Potluri, Stepan V. Lomov
11:10	CONDUCTIVITY ENHANCEMENT FOR CARBON NANOTUNES WITH SILVER DECORATION	CARBON NANOSTRUCTURES FOR FLEXIBLE AND HIGH EFFICIENCY ENERGY APPLICATION	EVALUATION OF PROGRESS OF PHYSICAL AGING ON VISCOELASTIC BEHAVIOR OF EPOXY RESIN	THE WORLD WIDE FAILURE EXERCISE- STRENGTH PREDICTION IS NOT EASY - BUT WE ARE GETTING THERE	OPEN DATA FORMATS AND SCRIPTING IN INTEGRATED MESO-LEVEL TEXTILE COMPOSITE SIMULATIONS
	Warintorn Thitsartarn(Institute of Materials Research and Engineering)	Wonbong Choi(University of North Texas)	Masayuki Nakada(Kanazawa Institute of Technology), Kosuke Hosaki(Kanazawa Institute of Technology), Yasushi Miyano(Kanazawa Institute of Technology)	Michael John Hinton (National Composites Centre)	Stepan V. Lomov(Katholieke Universiteit Leuven)
	Ag decorated TMWCNTs/Epoxy was presented as a new conductive nanocomposite with high electrical conductivity, as compared to epoxy resin, and retained mechanical properties of neat epoxy resin.	This talk will focus on engineering of carbon nanomaterials, graphene and carbon nanotubes (CNTs), and their applications in Li-ion battery and flexible solar cells.	The aging progressive rates which are the amount of horizontal and vertical translations of storage modulus of epxoy resin for various aging conditions can be used to estimate the aging process.	Sam Kaddour (QinetiQ Ltd) The purpose of this lecture is to review the progress achieved through the World Wide Failure Exercises	Paper demonstrates possibilities, given by the open data exchange format and command line scripting for meso-level textile composite simulations (example of WiseTex).
11:30	EFFECT OF CARBON NANOTUBE DEFORMATION ON ELECTRICAL CONDUCTIVITY OF POLYMER COMPOSITES	TAILORED ALIGNED-CARBON NANOTUBE NANOCOMPOSITES FOR ENERGY STORAGE	COMPRESSIVE BEHAVIOUR OF PVC FOAM IN ELEVATED TEMPERATURE USING DIGITAL IMAGE CORRELATION AND A MODIFIED ARCAN FIXTURE	and to challenge the community to apply the principles to other critical areas in the domain.	NCF/BMI COMPOSITE MATERIALS: EFFECT OF STITCHING THREADS
	Shen Gong(York University), George Zhenghong Zhu(York University), Emile Haddad(MPB Communications Inc)	Noa Lachman(Massachusetts Institute of Technology), Brian Wardle(Massachusetts Institute of Technology)	Ole Thybo Thomsen(University of Southampton), Janice Marie Dulieu-barton(University of Southampton), Siavah T Taher(Aalborg University)		Anqi Dong(Beihang University), Xinqing Zhao(Beihang University), Li Zhang(Beihang University), Shan Zhu(Beihang University)
	This paper studies the electrical conductivity of carbon nanotube polymer nanocomposites by considering the tunneling effect of radical deformable carbon nanotubes.	Recent advances in fabricating aligned CNT with ultrahigh volume fraction and controlling their surface by conformal coating create opportunities for improving the performance of supercapacitors.	The work focuses on experimental characterisation of PVC forms at elevated temperatures when subjected to compression, A modified Arcan fixture was used, and the deformations were measured using DIC.		Mechanical properties and compatibility with resin of stitching threads which used in NCP were investigated. Hygrothermal resistance of NCF composites was also investigated.
11:50	HIGH OPTOELECTRONIC PERFORMANCE OF LAYER- BY-LAYER ASSEMBLED CARBON NANOTUBE THIN FILMS	MECHANICAL RELIABILITY OF INORGANIC THIN FILM PHOTOVOLTAICS INTEGRATED WITH COMPOSITE LAMINATES	THE INFLUENCE OF TEMPERATURE ON THE STABILITY OF POLYMER FOAM CORED SANDWICH STRUCTURES	MODELLING COMPRESSIVE DAMAGE IN CFRP: COMBINING FRICTION WITH DAMAGE	MODELLING OF 3D WOVEN COMPOSITES WITH REALISTIC UNIT CELL GEOMETRY
	Yong Tae Park(University of Minnesota - Twin Cities Campus), Jaime C Grunlan(Texas A&M University)	Dimitrios Antartis(University of Illinois at Urbana- Champaign), Ioannis Chasiotis(University of Illinois at Urbana- Champaign)	Janice Marie Dulieu-barton(University of Southampton), Ole Thybo Thomsen(University of Southampton), Shufeng Zhang(University of Southampton)	Renaud Gutkin(Swerca SICOMP)	Steven Daniel Green(University of Bristol), Mikhail Matveev(University of Nottingham), Andrew C Long(University of Nottingham), Stephen Richard Hallett(University of Bristol)
	Highly transparent thin film electrodes were assembled through the alternate exposure of flexible PET substrates to positively- charged and negatively-charged aqueous mixtures.	The residual stresses, their gradients and the mechanical strength of inorganic photovoltaic films were thoroughly quantified for the first time.	The paper describes an experimental investigation on the influence of temperature on the stability of sandwich structures under three and four point bend loading.	A traction separation law combining damage and friction is developed to capture the response of composites under compression. An application to simulate the crushing of a wedge specimen is presented.	Both realistic (from simulation) and idealised unit cell geometries of a 2D woven composite are analysed using finite element analysis, with a voxel mesh and continuum damage mechanics model.
12:10	ELECTRICAL CONDUCTIVITY OF HYBRID/PATTERNED NANOCOMPOSITES FILMS	THE EFFECTS OF STRUCTURAL INTEGRATION AND MECHANICAL DEFORMATION ON THE ELECTRO- MECHANICAL PERFORMANCE OF STRUCTURAL BATTERIES	HOT-WET ENVIRONMENTAL PROPERTIES OF Z- PINNED CARBON-EPOXY COMPOSITES	STUDY OF NON-LINEAR TENSILE BEHAVIOUR OF DISCONTINUOUS CARBON-EPOXY PREPREG COMPOSITES	CHARACTERIZATION AND MODELING OF DAMAGE AT THE MESOSCALE OF WOVEN POLYMER MATRIX COMPOSITES.
	Rouhollah Dermanaki Farahani(Ecole Polytechnique de Montreal), Daniel Therriault(Ecole Polytechnique de Montreal)	Salah M Shalouf(Royal Melbourne Institute of Technology)	Adrian Mouritz(Royal Melbourne Institute of Technology)	Gergely Czel(University of Bristol), Michael R Wisnom(University of Bristol)	Christian Fagiano(ONERA), Martin Hirsekorn(ONERA), Gael Grail(ONERA), Vincent Chiaruttini(ONERA)
	With the aim at improving electrical conductivity of polymer nanocomposites at a given filler loading, a heterogeneous distribution of carbon nanotubes was achieved using two different approaches.	This research seeks to investigate the effects of mechanical deformation on the electrical performance of structural composite batteries made from polymer batteries embedded in CFRP.	Effect of water absorption from hot-wet environment on the delamination properties, impact damage resistance and joint properties of z-pinned composites.	Present study aims at investigating the tensile behaviour of unidirectional carbon- epoxy composites made with cut and overlapped prepreg plies.	A FE strategy is proposed to evaluate the effects of mesoscale transverse damage on the macroscopic mechanical properties of woven polymer matrix composites.
12:30			LUNCH		

	Room 522	Room 518ab	Room 520ad	Room 519b	Room 520c
10:50			BREAK		
	MODELLING AND SIMULATION VI Chairs: Stephen Richard Hallett, Silvestre T. Pinho	LCM 6 - PERMEABILITY BENCHMARK WORKSHOP Chairs: Nicolas Vernet, Edu Ruiz	NATURAL FIBER COMPOSITES 6 Chairs: Hiroyuki Hamada, Masahiro Arai	FATIGUE OF COMPOSITES 2 Chairs: Marino Quaresimin, Masahiro Arai	MULTI-FUNCTIONAL SMART COMPOSITES II Chairs: Krishna Sri Challagulla, Hamid Akbarzadeh
11:10	NUMERICALLY PREDICTED DAMAGE AND FAILURE ENVELOPES OF COMPOSITES FEATURING NON- LINEAR MATERIAL BEHAVIOR		SURFACE ANALYSES OF BASALT FIBRES: TAILORING THE INTERPHASE OF GREEN FIBRE REINFORCED COMPOSITES	SYNCHROTRON COMPUTED TOMOGRAPHY OF FATIGUE MICROMECHANISMS IN CFRP	PREPARATION AND CHARACTERIZATION OF NANOCELLULOSE/PVA GREEN COMPOSITES
	Jakob Gager(Polymer Competence Center Leoben), Martin Meindlhumer(FACC AG), Martin Schwab(Polymer Competence Center Leoben), Heinz E Pettermann(Vienna University of Technology)	WORKSHOP ON THE "2nd	Theresa Foerster(Leibniz Institute of Polymer Research Dresden), Edith Maeder(Leibniz Institute of Polymer Research Dresden), David Jesson(University of Surrey), John F. Watts(University of Surrey)	Serafina Consuelo Garcea(University of Southampton), Mark N Mavrogordato(University of Southampton), Anna E Scott(University of Southampton), Ian Sinclair(University of Southampton), Simon M Spearing(University of Southampton)	Hitoshi Takagi(University of Tokushima)
	Energy based stress/strain envelopes are computed to assess as operation ranges of textile composites based on multiple non-linear FEM simulations accounting for damage and plasticity.	INTERNATIONAL PERMEABILITY BENCHMARK"	The composition of surface of unsized, silanized and temperature treated basalt fibres is studied by XPS. The high temperature behaviour of two unsized basalt fibres is shown.	Fatigue micromechanical behaviour in carbon/epoxy has been investigated using Computed Tomography. Damage detected was quantified and compared with quasi-static load.	We fabricated cellulose nanofiber-reinforced PVA green composites, and found that the vacuum stirrer defoaming process is effective to obtain the composites with better mechanical performance.
11:30	MODEL FOR TIME-INDEPENDENT AND TIME- DEPENDENT DAMAGE EVOLUTION AND ITS INFLUENCE ON CREEP OF MULTIDIRECTIONAL POLYMER COMPOSITE LAMINATES		PREPARATION AND PROPERTIES OF PLANT FIBER MODIFIED PHENOLIC FOAM COMPOSITE MATERIALS	FATIGUE AND STATIC DAMAGE MODELLING OF CONTINUOUS GLASS FIBRE/EPOXY COMPOSITE	MAGNETOELASTIC RESPONSES OF A BI-LAYERED COMPOSITE CYLINDER WITH AN EMBEDED TIME- HARMONIC EIGENSTRAIN
	Amir Asadi(University of Manitoba), Raghavan Jayaraman(University of Manitoba)		Zhong-jia Yang(Beihang University), Yizhuo Gu(Beihang University), Xuelin Tan(Beihang University), Min Li(Beihang University), Zuoguang Zhang(Beijing University of Aeronautics and Astronautics)	Rim Ben toumi(PSA Peugeot Citroen), Jacques Renard(), Pongsak Nimdum(Ecole Nationale Superieure des Mines de Paris), Martine Monin()	Hamid Akbarzadeh(University of New Brunswick), Armin Abedini(University of New Brunswick), Zengtao Chen(University of New Brunswick)
	An analytical model was developed to predict simultaneous time- independent and time-dependent transverse cracking in multiple plies of multidirectional polymer composites and its influence on creep		Phenolic foam has excellent properties as exterior wall material, but low strength. Natural plant fibers are added before curing process, the mechanical property is reinforced by 30-50%.	Continuous fibrous composites are found to be increasingly used in structural automotive parts which are mostly subjected to cyclic loads.Hence, interest is focused on composites durability.	The present paper obtains analytical solutions for time- harmonic magnetoclastic responses of an infinitely-long bi- layered composite cylinder with embedded polynomial eigenstrain.
11:50	A SIMPLE PLASTICITY MODEL FOR PREDICTING TRANSVERSE COMPOSITE RESPONSE AND FAILURE		WETTABILITY EVALUATION OF FLAX AND PAPER FIBERS USING THE SESSILE DROP TECHNIQUE.	INFLUENCE OF PLY WAVINESS ON RESIDUAL STRENGTH AND FATIGUE DEGRADATION OF COMPOSITE WIND TURBINE BLADES	CARBON FIBRE SENSOR FOR CRACK MONITORING OF COMPOSITE MATERIALS
	Khong wui Gan(University of Bristol), Michael R Wisnom(University of Bristol), Stephen Richard Hallett(University of Bristol), Giuliano Allegri(University of Bristol)		Gilbert Lebrun(University of Quebec at Trois-Rivieres)	Milos Draskovic(Universitat Stuttgart), Udayanga Indunil kumar Galappaththi(Glasgow Caledonian University), Anthony Pickett(Universitat Stuttgart), Marc Capellaro(Universitat Stuttgart), Peter Mildendorf(Universitat Stuttgart)	Tobias Müller(Universitat der Bundeswehr Munchen), Alexander Horoschenkoff(Hochschule Munchen), Helmut Rapp(Universitat der Bundeswehr Munchen)
	A simple plasticity model is implemented in the explicit FE solver LS-Dyna for predicting falure in complex multi-axial load cases of composite materials.		Using the sessile drop technique, the spread and penetration of epoxy resin inside compressed pellets of fibers were used to qualify the fibers pretreatment.	Evaluation of the effect of ply waviness on residual strength and fatigue life of composite wind turbine blacks. Integration of manufacturing defects influence on the fatigue life.	Electric isolated ex-PAN carbon fibre rovings were used as piezoresistive embedded ensores for crack monitoring of microcracks in continuous fibre reinforced plastics and composite pressure vessels.
12:10	MODELING STRUCTURAL BEHAVIOUR OF PVC FOAM SANDWICH PANELS REINFORCED BY CFRP PINS			THE EFFECT OF TEMPERATURE ON THE MIXED- MODE INTERLAMINAR TOUGHNESS AND FATIGUE DELAMINATION GROWTH OF FIBRE REINFORCED PLASTICS	BINARY BRUSHES: A NOVEL APPROACH TOWARDS ENHANCED INTERFACIAL TUNABILITY IN MULTIFUNCTONAL POLYMER NANOCOMPOSITES
	Zhongwei Guan(University of Liverpool), Jin Zhou(University of Liverpool), Wesley J Cantwell()			Georgia Charalambous(University of Bristol), Giuliano Allegri(University of Bristol)	Bharath Natarajan(Rensselaer Polytechnic Institute), Ying Li(Rensselaer Polytechnic Institute), Tony Neely(University of South Carolina), Atri Rungal(University) of South Carolina - Columbia), Brian C Benicewicz(University of South Carolina - Columbia), Linda
	This paper presents numerical modeling of the structural response of PVC foam sandwich panels reinforced by CFRP pins subjected to compression.			This study addresses the characterisation of the temperature effect on the fracture toughness and fatigue delamination growth rate for an aerospace grade carbon fibre reinforced toughened epoxy.	We demonstrate the effectiveness of the binary brush approach in tuning interfacial interactions for enhanced dispersions and mechanical properties, through a study of homopolymer nanocomposites
12:30	-		LUNCH		

	Room 525	Room 520f	Room 520be		Room 516ab
10:50			BREAK		
	STRUCTURAL OPTIMIZATION 1 Chair: Paul M. Weaver, Damiano Pasini	MULTI-SCALE MODELING 1 Chairs: Gregory Odegard, Masato Nishi	BIO-INSPIRED COMPOSITES Chairs: François Barthelat, Christopher Hansen		MECHANICAL PROPERTIES - POSTER Chairs: Mehdi Hojjati, Jihua Chen
11:10	EFFECTS OF VISCOELASTICITY ON THE DEPLOYMENT OF BISTABLE TAPE SPRINGS	PARAMETRIC STUDY OF SIMULATION PARAMETERS FOR MOLECULAR DYNAMICS MODELING OF REACTIVE CARBON GASES USING REAXFF	DESIGN OF THE FIBER-WINDING LIGHTWEIGHT STRUCTURE INSPIRED BY BEETLE ELYTRA AND ITS MECHANICAL PROPERTIES	11:10	4-POINT BENDING FATIGUE TESTING OF THIN CARBON-EPOXY LAMINATES Catharine Marsden, Chun Li, Mark Biernacki, Scott Joseph Carnegie STIDY: ON COMPRESSIVE EXPERIMENT OF SINGLE CARBON FILAMENT
	Alex W Brinkmeyer(University of Bristol), Sergio Pellegrino(California Institute of Technology), Paul M Weaver(University of Bristol), Matthew Santer(Imperial College of Science)	Benjamin D. Jensen(Michigan Technological University), Ananyo Bandyopadhyay(Michigan Technological University), Kristopher E. Wise(NASA), Gregory Odegard(Michigan Technological University)	Ce Guo(Nanjing University of Aeronautics and Astronautics), Yi Zhou(Nanjing University of Aeronautics and Astronautics), Dong Li(Nanjing University of Aeronautics and Astronautics)	11:14	Tong Lili, Zhou Peiming STIMULUS RESPONSE POLYMER AND MULTIFUNCTIONAL COMPOSITES: CHALLENGES AND PROSPECTS
	The deployment of composite bistable tubular springs is investigated at various stowage times and temperatures. Experiments are compared with predictions from an analytical viscoelastic model.	MD parameters are investigated for the Reax Force Field for reactive gases present in the formation of carbon nanocomposite constituents at various temperatures and for two Reax parameterizations	Based on the microstructure of the cross-section of the beele elytra, a bio-inspired lightweight structure was designed and made, and its mechanical properties were studied with FEM.	11:22 1	Pavla Tesinova INSULATING LAYERED COMPOSITE MATERIALS MANUFACTURING AND THERMAL DIFFUSIVITY MEASUREMENTS Adam Dominiak, Roman Domarski
11:30	OPTIMAL DESIGN OF A COMPOSITE STRUCTURE RELEVANT TO LAMINATE DESIGN GUIDELINES	APPROACH FOR DRY TEXTILE COMPOSITE FORMING SIMULATION	MULTIFUNCTIONAL COMPOSITE SANDWICH STRUCTURES UTILIZING EMBEDDED MICROVASCULAR NETWORKS	11:26	STRENGTH ESTIMATION FOR FORMED PARTS OF CARBON FIBER REINFORCED THERMOPLASTIC COMPOSITE BY ACCOUNTING FOR FORMING PROCESS EFFECTS Takushi Miyake, Masako Seki
	Alexis Lasseigne(ONERA), François-xavier Irisarri(ONERA), Rodolphe Le riche(Ecole Nationale Superieure des Mines de St- Etienne)	Masato Nishi(JSOL Corporation), Tei Hirashima(JSOL Corporation)	Christopher Hansen(University of Massachusetts at Lowell), Jordan Tye(University of Massachusetts at Lowell)	11:30	RULE OF MIXTURE FOR COMPOSITE THERMOELECTRICS Yun Lu, Katsuhiro Sagara, Liang Hao, Hiroyuki Yashida, Zi Wu Ji, Fusheng Pan OPTIMIZATION AND EXPERIMENT OF COMPOSITE SQUARE BEAM
	A multiobjective optimization method based on GA has been adapted to deal with stacking sequence tables to improve an existing composite structure relevant to usual laminate design guidelines.	Response of dry textile is studied by meso-model. Then we propose macro-scale model that can reproduce in-plane properties and out-plane bending property in mesoscopic simulations.	Honeycomb sandwich composites with microvascular networks enable structural fluid transport and storage. Extruded fibers improve process reliability and recovery efficiencies near 100% are achieved.	11:38 I	Mingsen Yi STATISTICAL ANALYSIS OF SINGLE PPTA FIBERS Nathanael Alan Heckert, Jae hyun Kim, Gale A Holmes, Walter Mcdonough, Kirk Rice
11:50	COMPARISON OF RESPONSE OF GROOVED COMPOSITES TO LOADING VIA SPHERICAL AND CYLINDRICAL INDENTERS	MESO-MECHANICAL INVESTIGATION OF WOVEN CARBON FIBER REINFORCED PLASTIC	BIOINSPIRED HIERARCHICAL FUNCTIONAL MATERIALS TEMPLATED FROM NATURAL STRUCTURES		
	Holly K Jeffrey(Massachusetts Institute of Technology), Paul A Lagace(Massachusetts Institute of Technology)	Bertram Stier(Rheinisch Westfalische Technische Hochschule Aachen), Jaan Willem Simon(Rheinisch Westfalische Technische Hochschule Aachen), Stefanie Reese(Rheinisch Westfalische Technische Hochschule Aachen)	Di Zhang, Wang Zhang, Jiajun Gu, Shenmin Zhu, Huilan Su, Qinglei Liu, Tongxiang Fan, Chuangliang Feng (Shanghai Jiao Tong University)		
	Experimental and finite element methods are used to examine the response of grooved composites to spherical and cylindrical indenters, using six different laminates.	In this work, numerical and experimental results of woven FRP plates at the meso-scale are compared. Numerically obtained strain fields and DIC measurements until crack initiation are investigated.	A review of the development on using biomaterials with subtle hierarchical structures as biotemplates to fabricate biomorphic inorganic materials in Shanghai JiaoTong University.		
12:10		MOLECULAR MODELING OF PHYSICAL AGING IN EPOXY POLYMERS	PUMPING POTENTIAL OF A LEFT-VENTRICAL-LIKE FLEXIBLE-MATRIX-COMPOSITE STRUCTURE		
		Ananyo Bandyopadhyay(Michigan Technological University), Gregory Odegard(Michigan Technological University)	Hany A Ghoneim(Rochester Institute of Technology)		
		The objective of this study was to develop a molecular dynamics (MD) simulation method to predict the molecular structure of an epoxy material when subjected to various levels of physical aging.	The pumping potential of a left-ventrical heart-like composite structure is investigated both analytically and experimentally. Reasonably high pumping potential is realized.		
12:30			LUNCH		

12:30	Room 515	Room 710	Room 514 LUNCH	Room 524ab	Room 524c			
13:30	PL	PLENARY (Room 710) - Goichi Ben: "Fabrication and Evaluation of FRTP using in-situ polymerizable PA6 with AvRTM".						
	EXPERIMENTAL TECHNIQUES Chairs: John Botsis, Joël Cugnoni	MULTIFUNCTIONAL COMPOSITES SYMPOSIUM 7 Chairs: Minoru Taya, Henry Sodano	SYMPOSIUM ON MARINE COMPOSITES 7 Chairs: Fu-pen Chiang, Ole Thybo Thomsen	FRACTURE AND DAMAGE 7 Chairs: Chandra Veer Singh, Samit Roy	TEXTILE COMPOSITES 3 Chairs: Anthony M Waas, Kunigal N. Shivakumar			
14:30	SPRING-IN CHARACTERISTICS OF THERMOPLASTIC COMPOSITES WITH GLASS FIBER FABRIC REINFORCEMENT	FROM SMART SENSING TO MULTIFUNCTIONAL MATERIALS: ARE WE READY FOR THE CHALLENGES?	NONLINEAR BUCKLING OF SYNTACTIC FOAMS WITH IMPERFECT INTERFACE	EFFECT OF SUBSTRATE SURFACE MORPHOLOGY ON FATIGUE BEHAVIOUR OFADHESIVELY BONDED CARBON FIBRE REINFORCED PEEK COMPOSITES	EVALUATING DEFORMABILITY OF NON-CRIMP FABRIC AND MECHANICAL PERFORMANCE OF NON- CRIMP FABRIC COMPOSITES			
	Jasmin Brühmann(Universitat Siegen), Bernd Engel(Universitat Siegen)	Fu-kuo Chang (Stanford University)	Adel Shams(Polytechnic Institute of New York University), Matteo Aureli(Polytechnic Institute of New York University), Maurizio Porfiri(Polytechnic Institute of New York University)	Michelle Salvia(Ecole Centrale de Lyon), Réda el hak Ourahmoune(Ecole Centrale de Lyon), Nadir Mesrati(Ecole Nationale Polytechnique), Thomas Mathia(Ecole Centrale de Lyon)	Long Li(Beijing University of Aeronautics and Astronautics), Yan Zhao(Beihang University), Lijun Zhang(Beihang University), Wei Li(Hafei Aviation Industry Co. Ltd)			
	The conducted studies analyze the friction and spring-in behavior of glass filter reinforced polyamide-66 to derive suggestions for tool design and process criteria.	Multifunctional materials capable of sensing their own state & knowing their residual capabilities in real time offer tremendous new	Buckling of a spherical shell embedded in elastic medium with imperfect interface is studied to investigate failure of syntactic foams	The effect of surface morphology generated by sandblasting process on the long term behaviour of adhesively bonded PEEK composite single shear lap-joint specimen under cyclic loading was studied	Non-crimp fabric(NCP) has huge potential to replace traditional reinforcements for its combination good stability, outstanding drapability and prominent mechanical performance.			
14:50	COMPARISON OF METHODS TO CHARACTERIZE DAMAGE ONSET IN SHORT GLASS FIBER FILLED POLYPROPYLENE	abilities/opportunities for the design & usage of the materials.	PURE MOMENT APPROACH TO DETERMINE MIXED- MODE FRACTURE TOUGHNESS OF SANDWICH FACE/CORE INTERFACES	MIXED-MODE TRANSLAMINAR FRACTURE: EXPERIMENTAL RESULTS AND NUMERICAL MODELLING	MESO-SCALE ANALSYIS OF 2D GLASS WOVEN PREFOM UNDER COMPACTION			
	Anna Maria Hartl(Johannes Kepler University Linz), Winoj Naveen Balasooriya(Johannes Kepler University Linz), Martin Reiter(Johannes Kepler University Linz), Markus Schossig(Hochschule Anhalt (FH), Hochschule urangewandte Wissenschaftren), Michael Jarabek(Borealis		Christian Berggreen(Technical University of Denmark), George A Kardomateas(Georgia Institute of Technology), Leif A Carlsson(Florida Atlantic University)	Matthew John Laffan(Imperial College of Science), Silvestre T Pinho(Imperial College of Science), Paul Robinson(Imperial College of Science)	Prasad Potluri(University of Manchester), Zeshan Yousaf(University of Manchester), Fabien Leonard(University of Manchester), Philip Withers(University of Manchester)			
	Investigation of micro-mechanisms governing damage evolution in short glass fiber reinforced polypropylene by means of acoustic emission, volume strain and two-cycle tensile tests and SEM analysis.		Closed form algebraic expressions for the energy release rate and the mode-mixity are obtained for a debonded sandwich. Tests are conducted with a new servo-hydraulically driven loading system.	Experimental results from a series of mixed-mode translaminar fracture tests will be presented. The experiments will be simulated using commercially available modelling tools and a new damage model.	This paper presents an experimental technique involving micro CT for measuring the meso-scale geometry of single and multi- layer preforms under compression loading.			
15:10	ANALYSIS OF FLEXIBLE CLAMPING IN TENSILE TESTS OF MULTIDIRECTIONAL LAMINATES	BIO-INSPIRED NEUROMORPHIC NETWORK BASED ON CARBON NANOTUBE/POLYMER COMPOSITES	G-CONTROL FATIGUE TESTING OF DEBONDED SANDWICH COMPOSITES	MULTI-SCALE ANALYSIS OF EFFECTS OF CONSTITUENT PROPERTIES ON OPEN-HOLE TENSION PERFORMANCE OF COMPOSITE LAMINATES	3D WOVEN UNIFORM DENSITY DRY PREFORMS FOR THE AEROSPACE INDUSTRY			
	Faustino Mujika(Universidad del Pais Vasco), Neftali Carbajal(Universidad del Pais Vasco), Gustavo Vargas Silva(Universidad del Pais Vasco)	K. Kim, A. Tudor, C-L. Chen, B. Cho, A. M. Shen, D. Lee, and Y. Chen (University of California)	Marcello Manca(Technical University of Denmark), Christian Berggreen(Technical University of Denmark), Leif A Carlsson(Florida Atlantic University)	(Beijing University of Aeronautics and Astronautics)	Nicolas Juillard (JB Martin), Jonathan Lévesque, Olivier G. Vermeersch, Pascal Lamoureux-tremblay, Catherine Leroux (Group CTT), Daniel Puche, Odréanne Laverdière, Janie Duplessis (CE?GEP de Saint-Hyacinthe)			
	The tensile test of a multidirectional laminate is analysed. It is proposed an experimental method for determining bending and twisting compliances at the clamped ends of the specimen.	A device, synapstor, based on carbon nanotube/polymer composite to mimic a biological synapse is developed, and a synapstor-integrated neuromorphic circuit is fabricated to emulate a neuron network.	This work is aimed at fatigue characterization of sandwich composites using the MMB test method and the G-control technique, which allows real-time control of the energy release rate.	A combination of experiments and multi-scale numerical simulations were used to investigate the effect of constituent properties on open-hole tension performance of CFRP.	New developments for 2D woven uniform density preforms for the aerospace industry, a solution to increase productivity and mechanicals properties for carbon fiber reinforced composites.			
15:30	STRAIN RATE EFFECT ON SINGLE PPTA FIBER TENSILE BEHAVIOURS	CARBON NANOTUBES FOR IN SITU THERMOMECHANICAL AND THERMOCHEMICAL SENSING IN COMPOSITES	MANUFACTURING AND IMPACT BEHAVIOR OF SANDWICH COMPOSITES WITH EMBEDDED GRAPHENE PLATELETS	NUMERICAL AND EXPERIMENTAL ANALYSES OF MULTIPLE DELAMINATIONS IN CURVED COMPOSITE LAMINATES	EVALUATION OF THE IMPREGNATION CHARACTERISTICS OF THE CARBON FIBER REINFORCED COMPOSITES USING DISSOLVED POLYPROPYLENE			
	Jae hyun Kim, Nathanael Alan Heckert, Stefan D. Leigh, Walter Mcdonough, Kirk Rice, Gale A Holmes (National Institute of Standards and Technology(NIST))	Kalon L Lasater(University of Delaware), Gaurav Pandey(University of Delaware), Erik T Thostenson(University of Delaware)	Alfred Loos(Michigan State University), Mahmood Haq(Michigan State University), Rehan Umer(Khalifa University of Science Technology and Research), Lawrence T Drzal(Michigan State University)	Andrea Baldi(Polytechnic Institute of Milan), Alessandro Airoldi(Polytechnic Institute of Milan), Paolo Belotti(Polytechnic Institute of Milan), Paolo Bettini(Polytechnic Institute of Milan), Giuseppe Sala(Polytechnic Institute of Milan)	Song hee Han(Chonbuk National University), Hyun ju Oh(Chonbuk National University), Seong su Kim(Chonbuk National University)			
	PPTA fibers are tested under slow loading conditions despite of their ballistic caplication. This study focuses on measuring fiber properties at comparable loading condition with ballistic event.	In this research, we evaluate nanocomposite thermoresistive behavior where nanotubes effectively act as a network of sensors detecting thermal transitions in situ.	Sandwich composites constructed from glass fabric face sheets coated with graphene nanoplatelets and PVC foam core were manufactured by VARTM. The resulting structures were subjected to impact loads.	Experimental and numerical investigations of the response of curved composite laminates in the presence of multiple delaminations nucleated and propagated in different modes and regimes are presented	In this work, the novel solution impregnation method introduced solvent quenching was proposed to increase impregnation between the carbon fabric and PP.			
15:50	OPTIMIZED EXPERIMENTAL CHARACTERISATION OF PVC FOAM USING DIC TEST AND THE VIRTUAL FIELDS METHOD	CONDUCTIVE POLYANILINE NANOCOMPOSITES: ELECTROCHROMIC BEHAVIOR, ELECTROCHEMICAL ENERGY STORAGE AND GIANT MAGNETORESISTANCE SENSOR		EVALUATION OF THE APPLICABILITY OF THE FIRST PSEUDO-GRAIN FAILURE MODEL FOR SHORT GLASS FIBER REINFORCED POLYPROPYLENE MATERIALS	PARTICLE-BASED MODELLING OF THE GEOMETRY AND MECHANICAL BEHAVIOUR OF TEXTILE REINFORCMENTS			
	Peng Wang(Aalborg University), Fabrice Pierron(University of Southampton), Ole Thybo Thomsen(University of Southampton), Marco Rossi(), Lava Pascal(Katholieke Universiteit Leuven)	John zhanhu Guo(Lamar University), Huige Wei(Lamar University), Hongbo Gu(Lamar University), Jiahua Zhu(Lamar University), Suying Wei(Lamar University)		Martin Reiter(Johannes Kepler University Linz), Michael Jerabek(Borealis Polyolefine GmbH), Simon Gast(Borealis Polyolefine GmbH), Anna Maria Hard(Johannes Kepler University Linz), Zoltan Major(Johannes Kepler University Linz), Reinhold W. Lang(Johannes	Reza Samadi(University of Ottawa), Francois Robitaille(University of Ottawa)			
	This paper proposes an efficient experimental methodology to identify all the material stiffness parameters of PVC foams in one single test using Digital Image Correlation and Virtual Field Method.	the conductive PANI polymer nanocomposites were prepared for the applications of electrochromic devices, electrochemical energy storage and giant magnetoresistance sensors.		The deformation and damage behavior of short glass fiber reinforced Polypropylene was predicted by use of mean-field homogenization in combination with the first pseudo-grain failure model.	A particle-based modelling method enabling the accurate modelling of the geometry and constitutive behaviour of textile assemblies was presented. Simulation results were validated experimentally.			
16:10				MIXED MODE COHESIVE LAW FOR FIBRE/MATRIX INTERFACE- A COUPLED EXPERIMENTAL AND NUMERICAL STUDY	REALISTIC FEA MODELING OF 3D WOVEN COMPOSITES ON MESOSCALE			
				Karolina Martyniuk(Technical University of Denmark), Bent F Sørensen(Technical University of Denmark), Qingda Yang(University of Miami), Wei Liu(University of Miami)	Andrew Drach(University of New Hampshire), Borys Drach(University of New Hampshire), Igor Tsukrov(University of New Hampshire), Harun Bayraktar(Alhany Engineered Composites), Jon Goering(Albany Engineered Composites)			
				The fibre/matrix interface cohesive law are studieded by a coupled experimental and numerical approach. A single fibre specimen is tested in SEM and A-FEM simulations are carried out.	In this paper we present a procedure to develop realistic FEA models of 3D woven composites based on the as-woven geometry obtained by the textile modeling software			
16:30			BREAK	1				

12:30	Room 522	Room 518ab	Room 520ad LUNCH	Room 519b	Room 520c
13:30	PL	ENARY (Room 710) - Goichi Ben: "Fab	prication and Evaluation of FRTP using	g in-situ polymerizable PA6 with AvRT	M".
	MODELLING AND SIMULATION VII Chairs: Carole Nadot-Martin, Tong Earn Tay	LCM 7 - CHARACTERIZATION Chair: Philippe Causse	NATURAL FIBER COMPOSITES 7 Chairs: Debes Bhattacharyya, Ton Peijs	FATIGUE OF COMPOSITES 3 Chairs: Masamichi Kawai, Simon M. Spearing	MULTI-FUNCTIONAL SMART COMPOSITES III Chairs: Victor Mark Birman, Darren John Hartl
14:30	NUMERICAL VALIDATION OF HOMOGENIZATION MODELS FOR THE CASE OF ELLIPSOIDAL PARTICLES REINFORCED COMPOSITES	CHEMICAL SHRINKAGE AND THERMOMECHANICAL CHARACTERIZATION OF DIFFERENT RESIN SYSTEMS AND PREPREGS DURING CURE BY A NOVEL IN SITU MEASUREMENT METHOD	MECHANICAL PROPERTY OF PAPER REINFORCED THERMOSETTING RESIN COMPOSITE	DAMAGE PHENOMENA OF FIBRE REINFORCED COMPOSITES UNDER VHCF-LOADING	ADAPTATION OF DEVELOPING TENDON-TO-BONE INSERTION SITE TO OPTIMIZE STRESS ENVIRONMENT
	Elias Ghossein(Ecole Polytechnique de Montreal), Martin Lévesque(Ecole Polytechnique de Montreal)	Catherine Billotte(Ecole Polytechnique de Montreal), Edu Ruiz(Ecole Polytechnique), Clémentine Fellah(Ecole Polytechnique de Montreal)	Takanori Kitamura(Daiwa Itagami Co. Ltd.), Kanta Ito(Daiwa Itagami Co. Ltd.), Suguru Teramura(Daiwa Itagami Co. Ltd.), Ryo Marui(Marui Textile Machinery Co.Ltd.), Zhiyaan Zhang(Kyoto Institute of Technology), Yuqiu Yang(Donghua University), Hiroyuki Hamada(Kyoto	Ilja Koch, Maik Gude, Werner A. Hufenbach, Roman Koschichow (Technische Universitat Dresden), Karl Schulte, Julia Knoll (Technische Universitat Hamburg-Harburg)	Yanxin Liu(Washington University in St. Louis), Annie Gitomer Schwartz(Washington University in St. Louis), Victor Mark Birman(Missouri University of Science and Technology), Stavros Thomopoulos(Washington University in St. Louis), Guy M
	The purpose of this paper is to validate the performance of well- known analytical homogenization models for the case of composites reinforced by ellipsoidal (i.e. 3D) particles.	This study presents a novel in-situ technique allowing simultaneous characterization of resin cure as well as dimensional and rheological change during polymerization for thermosets and prepregs.	In this study, two kinds of unsaturated polyester resin were used to improve properties of reborn paperboard. The mechanical property and fracture behavior were analyzed and studied.	Within the paper the development of test principles for the characterisation of the VHCF phenomena and of damage models for NCF-CFRP as a basis for novel fatigue life evaluation methods is described.	Low stresses during development are compensated by tissue- scale and cell-scale stress concentrations yielding the stress environment conducive for the development of mineral at the postnatal enthesis.
14:50	MODELING AND PROGRESSIVE DAMAGE ANALYSIS OF FRP LAMINATES WITH PERIDYNAMIC THEORY	EFFECT OF NANOGRAPHITE ON THERMAL PROPERTIES OF LIQUID MOLDED POLYAMIDE-6 LAMINATES	UTILIZATION OF A THREE-STEP THERMO- MECHANICAL TREATMENT TO MODIFY WOOD PROPERTIES	A NEW INTEGRATED ANISOMORPHIC CFL DIAGRAM APPROACH TO OFF-AXIS FATIGUE LIFE PREDICTION OF CFRP LAMINATES AT ANY TEMPERATURES IN ANY FIBER-ORIENTATIONS	EFFECTS OF POROSITY SHAPE ON THE ELECTROMECHANICAL RESPONSE OF 3-3 PIEZOELECTRIC FOAMS
	Yile Hu(Shanghai Jiao Tong University), Yin Yu(Shanghai Jiao Tong University), Hai Wang(Shanghai Jiao Tong University)	Peter W. Barfknecht(University of Alabama - Birmingham), Selvum Brian Pillay(University of Alabama - Birmingham), Uday K Vaidya(University of Alabama - Birmingham)	Rébla Gonçalves Vasconcelos(Universidade de Brasilia), Claudio Henrique Del menezzi(Universidade de Brasilia)	Masamichi Kawai(Tsukuba University)	Krishna S Challagulla(Laurentian University), Benjamin V Nguyen(Laurentian University)
	A new 3D peridynamic model for composite laminates was proposed and used to analyze the progressive damages in notched laminates. Its predictions agree well with result in literatures and experiments.	Nanographite platelets to be used as an additive for liquid molded thermoplastic laminates are evaluated for their effect on anionic polyamide-6 thermal properties.	A three-step thermo-mechanical treatment was quite effective in improving all mechanical and surface properties, as well as equilibrium moisture content of wood.	A fatigue model is formulated that can efficiently predict the fatigue life of CFRP laminates under off-axis fatigue loading in any fiber orientation with any stress ratio at any temperature.	The effects of porosity geometry on the effective electromechanical response and figures of merit of 3-3 piezoelectric foams is studied.
15:10	PREDICTION OF COMPRESSION AFTER IMPACT STRENGTH BASED ON INSTABILITY OF DELAMINATION	RTM OPTIMAL INJECTION VELOCITY DETERMINATION BY CAPILLARY RISE MEASUREMENTS USING INFRARED THERMOGRAPHY	FABRICATION AND MECHANICAL PROPERTIES OF UNIDIRECTIONAL COMPOSITE OF SILK FIBER/PLA BY COMPRESSION MOLDING	MECHANICAL COUPLING BETWEEN METAL LINER AND COMPOSITE STRUCTURE IN TYPE III TANKS DURING HIGH PRESSURE FATIGUE LOADING.	EFFECT OF FOAM SHAPE AND PIEZOELECTRIC MATERIAL PROPERTIES ON THE ELECTROMECHANICAL RESPONSE OF 3-3 PIEZOELECTRIC FOAMS
	Makoto Ichiki(Sophia University), Hiroshi Suemasu(Sophia University), Yuichiro Aoki(Japan Aerospace Exploration Agency)	Christophe Ravey(Ecole Polytechnique de Montreal), Edu Ruiz(Ecole Polytechnique), François Trochu(Ecole Polytechnique de Montreal)	Anin Memon(Kyoto Institute of Technology), Asami Nakai(Gifu University)	Dominique M Perreux(Universite de Franche-Comte)	Krishna S Challagulla(Laurentian University), Jaspreet Singh(Laurentian University), T.a. Venkatesh(State University of New York at Stony Brook)
	Compression strength reduction of CFRP laminates with double spiral damage is studied numerically considering instability of the damage. The failure process is simulated by using interface element.	The goal of this investigation is to develop a new experimental technique, with Infrared thermography, in order to determine the optimal injection velocity for carbon fibers fabrics in RTM processing	The unidirectional composites of silk/PLA were fabricated using compression molding. The reinforcement fibers were paralleled with matrix resin fiber and were used as intermediate materials.	We present an original analysis of the life prediction in fatigue loading of type III tanks. This type of tank is made of a metallic liner and a composite structure for load bearing.	The effect of foam shape and piezoelectric material properties (PZT, BaTiO3, barium sodium niohate, relaxor ferroelectric) on the electromechanical response of 3-3 piezoelectric foams is studied
15:30	DISPLACEMENT BASED FINITE STRIP ANALYSIS OF A CRACKED LAMINATE WITH APPROPRIATE BOUNDARY CONDTIONS FORMULATION	NUMERIC MODELING OF THE FIBROUS MATERIAL WEAVING PROCESS FOR COMPOSITE MATERIAL	HIGH PERFORMANCE SELF-REINFORCED POLVLACTIC ACID BIOCOMPOSITES WITH DEGRADATION SENSING	AN INVESTIGATION INTO THE DAMAGE DEVELOPMENT AND RESIDUAL STRENGTHS OF OPEN-HOLE SPECIMENS IN FATIGUE	THE BEHAVIOUR OF MAGNETO-RHEOLOGICAL ELASTOMERS UNDER EQUI-BIAXIAL TENSION
	Farrukh Hafeez(The Petroleum Institute), Shuguang Li(University of Nottingham), Fahad Almaskari()	Charlotte Florimond(INSA), Emmanuelle Vidal-sallé(Institut National des Sciences Appliquees de Lyon), Philippe Boisse(Institut National des Sciences Appliquees de Lyon), Jérôme Viffayeau(ENSAIT)	Fang Mai(Queen Mary and Westfield College, University of London), Emiliano Bilotti(Queen Mary and Westfield College, University of London), Ton Peijs(Queen Mary and Westfield College, University of London)	Oliver James Nixon-pearson(University of Bristol), Stephen Richard Hallett(University of Bristol)	Philip Harrison(University of Glasgow), Gerlind Schubert(University of Glasgow), Zaoyang Guo(Chongqing University)
	The finite strip method is applied to the generalized plane strain problem of cracked laminate. ODE for the problem are solved directly by using appropriate boundary conditions.	Implicit simulation of the fibrous material weaving process to obtain residual stresses. The behavior of the yarn is defined by a hypoelastic law in a user material subroutine in ABAQUS/Standard.	A new family of self-reinforced polymer composites based on the biopolymer polylactic acid (PLA) is presented. The biodegradation can be monitored via the introduction of carbon nanotubes (CNTs).	An experimental program was carried out in order to understand the sequence of damage development throughout the life of open-hole composite laminates in fatigue. A residual strength study ensued.	Equi-biaxial tension tests have been performed on isotropic and anisotropic magneto-rheological elastomers (MREs), a smart material whose mechanical properties can be instantaneously changed.
15:50	VISCOELASTIC SHEAR LAG ANALYSIS OF THE DISCONTINOUS FIBER COMPOSITE	MODELLING DUAL-SCALE FLOW-DEFORMATION PROCESSES IN COMPOSITES MANUFACTURING	THERMAL BEHAVIOR OF SUGARCANE BAGASSE/PP COMPOSITES USING LIGNIN AS COMPATIBILIZER AGENT	DURABILITY OF CARBON FIBER REINFORCED COMPOSITE LAMINATES FOR LARGE PRECISE SPACE STRUCTURE UNDER CYCLIC THERMAL LOADING	SHAPE MEMORY ALLOY LAMINATE FOR DESIGN OF SELF-FOLDING RECONFIGURABLE STRUCTURES
	R. byron Pipes(Purdue University), Nicholas Alan Smith(Purdue University)	Mohammad Sadegh Rouhi(Chalmers University of Technology), Maciej Wysocki(Swerea SICOMP), Ragnar Larsson(Chalmers University of Technology)	Patrícia Câmara Miléo(Universidade de Sao Paulo)	Satoshi Kobayashi(Tokyo Metropolitan University), Masahiro Tomite(Tokyo Metropolitan University), Minoru Iwata(Kyushu Institute of Technology), Num Huu Tran(Japan Aerospace Exploration Agency), Ken Goto(Japan Aerospace Exploration Agency)	Edwin Alexander Peraza-hernandez(Texas A&M University), Darren John Hartl(Texas A&M University), Dimitris C Lagoudas(Texas A&M University)
	Viscoelastic shear lag analysis to provide the foundation for short fiber viscoelastic micromechanical model to be used in the prediction of time dependent properties of short fiber composites.	The idea is to present a generic algorithm to model dual-scale flow-deformation processes in manufacturing of advanced composites using poromechanics	The aim of this work was to investigate the thermal properties of polypropylene composites reinforced with cellulose, obtained from sugarcane bagasse, using lignin as a compatibilizer	Thermal cycle tests were conducted on CFRP laminates to discuss durability under space environment. Transverse erracking due to cyclic thermal stress initiated and accumulated during tests.	We examine a self-folding material system that consists of an active laminate including two outer layers of thermally-actuated shape memory alloy (SMA) separated by a compliant passive layer.
16:10	INITIATION AND PROPAGATION OF FIBER FAILURE IN COMPOSITE LAMINATES	CARBON FIBER'S SURFACE CHEMISTRY AND SELF- ASSEMBLED INTERPHASE FORMATION IN FIBER REINFORCED POLYMER COMPOSITES		COMPRESSION AFTER IMPACT AND FRACTURE TOUGHNESS OF CARBON FIBER/EPOXY COMPOSITES MODIFIED WITH CARBON NANOTUBES	
	Endel Larve(University of Dayton), David H Mollenhauer(Air Force Research Laboratory), Timothy D Breizman(Air Force Research Laboratory), Kevin Hoos(University of Dayton), Michael Swindeman(University of Dayton) A progressive fiber failure modeling with statistical scaling of the initiation stress has been developed and demonstrated in laminated composites	Felix Nguyen(Toray Composites (America)), Kenichi Yoshioka[Toray Industrise Inc.), Al HorqCioray Composites America Inc.), Daigo Kobayashi(Toray Industrises Inc.), Yoshifumi Nakayama(Toray Industrise Inc.), Tomoko Ichikawa(Toray Industries Inc.), Eric Aston(University of Carbon fiber's surface chemistry, a robust interphase formation by a self-assembled process of a nanomaterial and effects of the reinforced interphase on the composite's properties are discussed.		Marcel Siegfried(Katholieke Universiteit Leuwen), Carmen Tola(), Stepan V. Lomov(Katholieke Universiteit Leuwen), Ignaas Verposet(Katholieke Universiteit Leuwen) The study investigates the effect of carbon nanotubes on the delaminated area after impact and the residual compression strength of woven carbon fiber/epoxy composites.	
16:20		1	BREAK	l	

12:30	Room 525	Room 520f	Room 520be		Room 516ab
13:30		PLENARY (Room 710) - Goichi Ben: "	Fabrication and Evaluation of FRTP usir	ng in-s	situ polymerizable PA6 with AvRTM".
	STRUCTURAL OPTIMIZATION 2	MULTI-SCALE MODELING 2			MODELING I - POSTER
	Chair: Paul M. Weaver, Damiano Pasini	Chairs: Gregory Odegard, Masato Nishi			Chair: Alireza Forghani
14:30	OPTIMIZED FIBER STEERING AND LAYER STACKING	NUMERICAL MODELLING OF THE WEAVING		14:30	A NEW DYNAMIC REANALYSIS METHOD FOR THE COMPOSITE STRUCTURES
	FOR ELASTICALLY TAILORED, DAMAGE TOLERANT LAMINATES	PROCESS FOR TEXTILE COMPOSITE			Xu Zhong Hai
	Wenli Liu(University of Bath), Richard Butler(University of Bath), Andrew Thomas Rhead(University of Bath)	Jérôme Vilfayeau(ENSAIT), David Crepin, Damien Soulat, François Boussu (Ecole Nationale Superieure des Arts et Industries Textiles),		14:34	ON THE NUMERICAL MODELLING OF THE BEHAVIOUR OF MECHANICALLY JOINTED TIMBER BASED COMPOSITE CONNECTIONS Hacene Attaider Marc Oudiene El mahdi Mechlat
		Philippe Boisse(Institut National des Sciences Appliquees de Lyon)		4 11 0 0	ELASTIC ANALYSIS OF CIRCULAR SANDWICH PLATES WITH FGM FACE-SHEETS
	This paper presents a combined optimization strategy for	Study's aim is to have a good prediction of the geometry and the		14.30	Roberta Sburlati, Seyed Rasoul Atashipour
	minimum mass panels satisfying buckling and damage tolerance using blended layer stacking of tow steered layers and straight fiber layers.	mechanical properties of the 3D woven unit cell.		14:42	FROM MICROSTRUCTURE CHARACTERIZATION TO MULTI-SCALE MODELLING OF INJECTED CARBON FIBRE REINFORCED PEEK
					Jeremy Crevel, Florentin Berthet, Marie-laetitia Pastor, Frederic Lachaud
14:50	THE DESIGN OF A PRE-WARPED BUS DOOR FOR LOW COST COMPOSITE MANUFACTURING	A NOVEL APPROACH TO MODELLING OF FIBER- REINFORCED COMPOSITES WITH CARBON NANOTUBES		14:46	AN AUTOMATED UNIT-CELL MODELLING TOOL UNITCELLS ON ABAQUS PLATFORM DRAWING FUNCTIONALITIES FROM MULTIPLE EXTERNAL CODES
	Thishana Va(Companyity Innersting Control)	Valantin & Domonou/Vatholiska Universitait Lauren) Stenan V			THEORETICAL AND NUMERICAL ANALYSIS OF STRESS DISTRIBUTION IN GERR ROD ROND ANGUORAGE
	zin-cieng Tu(composites innovation centre)	Lomov(Katholieke Universiteit Leuven), Larissa Gorbatikh(Katholieke Universiteit Leuven), Ignaas Vernoest(Katholieke Universiteit Leuven)		14:50	Pan Zhang, Peng Feng
	A pre-warped bus entrance door was designed to overcome the	The effect of CNTs on the onset of transverse cracks in		14154	VARIABLE STIFFNESS FLEXIBLE MATRIX LAMINATES WITH PRESCRIBED FINITE ELASTIC
	large thermal deformation. The new door demonstrates	unidirectional composites was analyzed through a novel Finite		14.54	DEFORMATION
	door replaced.	single simulation.			Carlos Santos Sousa, Pedro P. Camanho, Afzal Suleman, Francisco Manuel Pires
	-	-		14:58	LINKING PROCESS MODELLING WITH STRUCTURAL ANALYSIS OF COMPOSITE LAMINATED PLATES
15:10	OPTIMIZATION OF VARIABLE ANGLE TOW PLATES WITH ONE ERFE EDGE USING LAMINATION	MULTISCALE ANALYSIS FOR PREDICTION OF STRENGTH IN TEXTLES UNDER COMBINED			USING LAYERWISE THEORY
	PARAMETERS	THERMOMECHANICAL LOADING			Hamidreza Bakhtiarizadeh, Abdul rahim Ahamed Arafath, Reza Vaziri
	Thengming Mu(University of Prictol) Cangadharan	Wasley Ress Melandan (Tayas A&M University) John D		15:02	LAMINATED COMPOSITE PLATES
	Raju(University of Bristol), Paul M Weaver(University of	Whitcomb(Texas A&M University)			Jangwoo Han, Jun-sik Kim, Maenghyo Cho
	Bristol)			15:06	QUANTIFYING THE SHEAR COUPLING EFFECT IN FOUR-POINT BENDING TESTS OF ANGLE PLY
	This paper presents a buckling optimization strategy for the	Progressive failure analysis is performed at the fiber-matrix and		13.00	LAMINATES
	design of variable angle tow composite plate with one free edge using the lamination parameters	textile scales to predict the effect that strength uncertainty and thermal residual stresses have on damage development			Diane Wowk, Catharine Marsden, David Thibaudeau
	uong the minimuton parametero.	inernan residual stresses nave on damage de relopment.		15:10	NUMERICAL SIMULATION OF COMPOSITE STRUCTURE REPAIRED BY EXTERNAL BONDED PATCHES
	ACCOUNTING FOR MANIFESCIER ADD TH	MOLECULAR DVNAMICS AND THE CORRESPONDING			
15:30	CONSTRAINTS IN THE OPTIMISATION OF	RHEOLOGICAL RESPONSE OF POLYMER		15:14	BUCKLING AND POST-BUCKLING BEHAVIOUR OF TOP-HAT CROSS-SECTION COMPOSITE BEAMS WITH
	COMPOSITE STRUCTURES	NANOCOMPOSITES		13.14	VARIOUS SEQUENCES OF PLIES
	Vinay Madhavan(Cenaero), Philippe Martiny(Cenaero)	Dong gi Seong(Korea Institute of Materials Science)			Hubert Debski
				15:18	REALIZING DOMAIN SUPERPOSITION MODEL IN NASTRAN FOR PREDICTING THE MECHANICAL PROPERTIES OF TEXTILE COMPOSITE
	This paper discusses the implementation of manufacturability	Dynamic behavior of molecule and the characteristic rheological			Xiuhua Chen, Yan Deng, Ming Li, Hai Wang
	constraints in the design optimisation of composite structures. The results were validated against an academic, and an	behavior from complex interactions in nanocomposite were predicted by a newly proposed molecular model and Brownian		15:22	A NEW 3D FINITE ELEMENT MODEL FOR THE MECHANICAL ANALYSIS OF RANDOM FIBER COMPOSITE
	industrial case.	dynamics simulation.			Zixing Lu, Zeshuai Yuan, Qiang Liu
15:50	STACKING SEQUENCE TABLES FOR LAMINATE BLENDING OPTIMIZATION	NUMERICAL DESIGN OF COMPOSITE MATERIALS THROUGH MULTI-SCALE COMPUTER SIMULATION			
	François-xavier Irisarri(ONERA), Alexis Lasseigne(ONERA), François-henri Leroy(ONERA)	John Leach(Battelle Memorial Institute), James Mackiewicz()			
	This paper introduces stacking sequence tables for the optimal design of laminated composite structures with ply drone. Design	This paper covers a 3 year US Office of Naval Research effort to			
	guidelines are enforced to ensure manufacturability of the solutions.	design.			
16.10		ESTIMATION OF RESIN FLOW FOR FRP BASE ON			
10:10		MPS METHOD			
		Shota Nodomi(Osaka University), Tetsusei Kurashiki(Osaka University), Ziming Guo(Osaka University), Gaku Yoshikawa(Osaka University), Fumikazu Miyasaka(Osaka University)			
		In this study, the resin flow simulation has been developed based on MPS (Moving Particle Semi-implicit) method which is one of the particle methods.			
16:00		1	BREAK		

	Room 515	Room 519a	Room 514	Room 524ab	Room 524c
16:30	EFFECT OF RESIDUAL STRESSES FROM MANUFACTURING ON PROPERTIES Chairs: Samer Tawfik, John J. Wang	MULTIFUNCTIONAL COMPOSITES SYMPOSIUM 8 Chairs: Fu-Kuo Chang, Nikolaus Correll	BREAK SYMPOSIUM ON MARINE COMPOSITES 8 Chair: Veronica Eliasson	FRACTURE AND DAMAGE 8 Chairs: Chandra Veer Singh, Samit Roy	TEXTILE COMPOSITES 4 Chairs: Francois Robitaille, Kunigal N. Shivakumar
16:50	DETERMINISTIC DESIGN AND MANUFACTURING OF CARBON NANOTUBE STAPLE YARNS	USE OF CARBON FIBER SENSORS TO DETERMINE THE RESIN FLOW	EFFECTS OF NANOCLAYS AND WOOD FLOUR ON THE PERFORMANCE OF POLYURETHANE FOAMS	THE EFFECT OF CYCLIC SOLUTION TEMPERATURE ON FLEXURAL PROPERTY OF UNSATURATED POLYESTER RESIN UNDER LIQUID AND VAPOR PHASE	BRAIDING TAKE-UP SPEED OPTIMIZATION - CASE STUDIES
	Sameh H. Tawfick(Massachusetts Institute of Technology), Abhinav Rao(University of Michigan - Ann Arbor), A. john Hart(University of Michigan - Ann Arbor)	Mohsen Bakhshi(Hochschule Munchen), Alexander Horoschenkoff(Hochschule Munchen)	Mahesh Hosur(Tuskegee University), Gregory Strawder(Tuskegee University), Shaik Jeelani(Tuskegee University)	Pradchar Pradyawong(Tokyo Institute of Technology), Masatoshi Kubouchi(Tokyo Institute of Technology), Saiko Aoki(Tokyo Institute of Technology)	Johan Hendrik Van ravenhorst(University of Twente), Bert Rietman(University of Twente), Remko Akkerman(University of Twente)
	We present a new method to fabricate continuous high-strength staple yarns from long carbon nanotubes, by rolling and twisting of aligned CNT microstructures.	Two parallel carbon fibers as electrodes and the resin with lithium ions as electrolyte behave like a low capacitor. This capacitive sensor can be used to measure the resin flow in closed moulds.	This study deals with improving the performance of closed cell foam cores. We have used nanoclay and wood flour as fillers and shown significant improvement in the properties of foam.	The results showed that the effect of cyclic solution temperature can be more accelerate mechanical failure of UP. This fact suggests the possibility of tank top failure.	Circular braiding currently lacks automatic generation of optimum CNC code. A geometry-based procedure for braid angle optimization was designed and implemented for arbitrary mandrels.
17:10	INFLUENCE OF TRIMMING PROCESS ON THE SURFACE QUALITY AND THE MECHANICAL BEHAVIOR OF CFRP STRUCTURES: STATIC AND FATICIE TESTS	MODELING AND SIMULATION OF SLOTTED WAVEGUIDE ANTENNA STIFFENED STRUCTURES	THERMAL AND VISCOELASTIC PROPERTIES OF SC15 EPOXY RESIN COMPOSITES MODIFIED WITH MONTMORILLONITE NANOCLAY EXPOSED TO UV RADIATION	A MULTI-SCALE VISCOELASTIC COHESIVE LAYER MODEL FOR PREDICTING DELAMINATION IN HIGH TEMPERATURE POLYMER MATRIX COMPOSITES	DAMAGE CHARACTERIZATION OF TRIAXIAL BRAIDED COMPOSITES UNDER TENSION USING FULL-FIELD STRAIN MEASUREMENT
	Haddad Madjid(Institut Clément Ader), Habiba Bougherara(Ryerson University), Redouane Zitoune(Institut Clément Ader), Florent Eyma(Institut Clément Ader), Bruno Castanié(Institut Clément Ader)	Woon kyung Kim, Robert A Canfield(Virginia Polytechnic Institute and State University (Virginia Tech)), William G Baron, James M Tuss, Jason E Miller (Air Force Research Laboratory)	Alfred Tcherbi-narteh(Tuskegee University)	Samit Roy(University of Alabama - Tuscaloosa)	Tobias Wehrkamp-richter(Technische Universitat Munchen), Monika Humbs(Technische Universitat Munchen), David Schultheiss(Technische Universitat Munchen), Roland Hinterhoelz(Technische Universitat Munchen)
	First the influence of machining process and composite material nature on the machining defects are investigated. Then the impact of these damages on the mechanical behavior is detailed.	This paper is concerned with modeling and simulation of Slotted Waveguide Antenna Structures with the aim to improve the structural strength and stiffness of an integrated aircraft wing or fuselage.	Effects of UV radiation on Thermal and Viscoelastic properties of unmodified and modified SC 15 with different amount of Montmorillonite nanoclay epoxy resin system was studied.	A novel numerical-experimental methodology is outlined to determine cohesive stress and damage parameters for isothermally aged polymer matrix composites using a viscoelastic cohesive layer model.	An experimental study was conducted to characterize the damage behavior of 2D triaxial braided carbon/epoxy composites and investigate the effects of the textile architecture on the strain field.
17:30	MICROMECHANICAL INVESTIGATION OF RESIDUAL STRESSES AND STRENGTH OF CROSS-PLY LAMINATES	DIELECTROPHORETICALLY STRUCTURED PIEZOELECTRIC COMPOSITES	COMPATIBILITY AND FLAMMABILITY STUDY OF UNSATURATED POLYESTER / FUNCTIONALISED PHENOLIC RESIN BLEND MATRICES FOR GLASS REINFORCED COMPOSITES	MODELLING CRACK PROPAGATION IN PARTICLE- REINFORCED COMPOSITES USING THE ELEMENT- FREE GALERKIN METHOD	NOTCHED RESPONSE OF NON-CRIMP FABRIC THIN- PLY LAMINATES
	Fatih Ertugrul Oz(Bogazici University), Nuri Bulent Ersoy(Bogazici University)	Hamideh Khanbareh(Delft University of Technology), Pim Groen(Delft University of Technology), Sybrand Van der zwaag(Delft University of Technology)	Latha Krishnan(University of Bolton), Baljinder Kandola(University of Bolton)	Nelson Madalai Muthu(Indian Institute of Technology, Bombay), Brian George FalzonQueen's University Belfast), Surjya Kumar Maiti(Indian Institute of Technology, Bombay), Shahin Khoddam(Monash University)	Albertino Arteiro(Universidade do Porto), Giuseppe Catalanotti(Universidade do Porto), José Xavier(Universidade de Tras-os-Montes e Alto Douro), Pedro P. Camanho(Universidade do Porto)
	Elastic moduli prediction, residual stress investigation and progressive failure analysis are carried out for a cross-ply A84/8552 by finite elements micromechanical analysis with a square-packed RVE.	Significant improvement in piezoelectric properties of lead- tituante (PT)-polymer composites is achieved by dielectrophoretic alignment of the ceramic particles inside the polymer matrix.	The UP/allyl-functinalised PH co-blended resins of different ratios exhibits good compatibility. Their flammability decreased with increasing phenolic content without affecting mechanical properties.	A novel way of modelling and predicting the crack propagation path within the matrix of particle-reinforced composites is presented. Phenomena such as crack tip shielding due to fibers are shown.	The mechanical response of non-crimp fabric thin-ply laminates is studied. The size effect and notch sensitivity were similar to those in UD laminates, but the response to bearing loads was improved.
17:50	TENSILE, COMPRESSIVE AND SHEAR RESIDUAL STRENGTHS OF COMPOSITE STRUCTURES SUBJECTED TO BALLISTIC IMPACT WITH DIFFERENT VELOCITIES	FUNCTIONALIZED GRAPHENE- BATIO3/FERROELECTRIC POLYMER NANOCOMPOSITES WITH EXCELLENT DIELECTRIC DPODEPTIES		RESIDUAL COMPRESSIVE STRENGTH ASSESSMENT OF IMPACTED LAMINATES BASED ON C-SCAN DATA	ANALYSIS AND MODELING OF 3D INTERLOCK FABRIC COMPACTION BEHAVIOR
	John J Wang(Australian Government Defence Science and Technology Organisation)	TROFERTIES Zhi-min Dang(University of Science and Technology Beijing), Dongrui Wang(University of Science and Technology Beijing)		Yu Yang(University of Nottingham), Xiasheng Sun(China Aviation Industry Corp), Shuguang Li(University of Nottingham)	Nicolas Vernet(Ecole Polytechnique de Montreal), François Trochu(Ecole Polytechnique de Montreal)
	Very limited research has been reported in measuring residual strengths of composite structures subject to ballistic damage. This paper summarises research carried out at DSTO / CRC- ACS in this area.	The functionalized graphene nanosheets(fRGO)-BT/PVDF nanocomposites were fabricated,which exhibit a typical percolation transition, a relatively low loss and show a temperature independent behavior.		A method of assessing residual compressive strength of impacted laminates is presented, which is based on C-scan data, and sufficiently accurate and convenient for practical use.	The goals of this investigation is to study the influence of weaving on the compaction behaviors of 3D interlock fabrics in order to create a compaction model.
18:10	SOLVOTHERMAL METHOD FOR RECYCLING HYBRID COMPOSITE MATERIALS			EVALUATION OF LOADING RATE DEPENDENCE ON FRACTURE BEHAVIOR OF CFRP LAMINATE WITH HIGH SPEED IMAGING	MODELING TEXTILE REINFORCED CEMENTITIOUS COMPOSITES AND EFFECT OF ELEVATED TEMPERATURES
	Armando Tibigin Quitain(Kumamoto University), Katsuji Shibata(Hitachi Chemical Co. Ltd.), Mitsuru Sasaki(Kumamoto University), Motonobu Goto(Nagoya University)			Hideaki Kusano(Shimadzu Corporation), Yoshiyasu Hirano(Japan Aerospace Exploration Agency), Akinori Yoshimura(Japan Aerospace Exploration Agency), Yuichiro Aoki(Japan Aerospace Exploration Agency) Yutuka Ivahori(Japan Aerospace Exploration Agency)	Johan Blom(Vrije Universiteit Brussel)
	Solvothermal method using benzyl alcohol for recycling hybrid composite materials is investigated. Degradation behavior is elucidated by analyzing decomposition rate and products, and by SEM analyses.			We had a purpose of finding the difference of the fracture on difference of the layer by the high speed imaging. The images were analyzed by Digital Image Correlation.	A textile reinforced cementitious composites beam under tension, compression and bending will be modeled using an analytical model and FEM software, including the effect of elevated temperature.
18:30			End		

	Room 522	Room 518ab	Room 520ad	Room 519b	Room 520c
16:30			BREAK		
	MODELLING AND SIMULATION VIII Chair: Tong Earn Tay	OUT OF AUTOCLAVE MANUFACTURING Chairs: Steve Nutt, Goran Fernlund	NATURAL FIBER COMPOSITES 8 Chairs: Debes Bhattacharyya, Ton Peijs	FATIGUE OF COMPOSITES 4 Chairs: Masamichi Kawai, Simon M. Spearing	MULTI-FUNCTIONAL SMART COMPOSITES IV Chairs: Krishna Sri Challagulla, Tobias Müller
16:50	PREDICTION OF THE HOLE-SIZE EFFECT IN THE OFF AXIS TENSILE SPECIMEN USING AN INTRINSIC FLAW	INFLUENCE OF AIR RELEASE AGENT ADDITIVE ON VACUUM BAG CURABLE PREPREG	HIERARCHICAL REGENERATED CELLULOSE FIBRE REINFORCED POLYHYDROXYBUTARATE	INTERLAMINAR FATIGUE CRACK GROWTH IN CARBON FIBER REINFORCED COMPOSITES	ANALYTICAL AND NUMERICAL MODELING FOR 3D SMART ORTHOTROPIC GRID-REINFORCED COMPOSITE STRUCTURES
	Johnathan Goodsell(Purdue University)	Baoyan Zhang(China Aviation Industry Corp)	Alexander Bismarck(Imperial College of Science), Siti rosminah Shamsuddin(Imperial College of Science), Koon-yang Lee(Imperial College of Science)	Steffen Stelzer(Montanuniversitat Leoben), Rhys Jones(Monash University), Andreas J. Brunner(Empa, Swiss Federal Laboratories for Materials Science & Technology)	Edris Hassan(Dalhousie University)
	Prediction of the hole-size effect in a composite 10 degree off- axis tensile specimen has been accomplished by means of a computationally-efficient intrinsic flaw distribution model.	The main physical and mechanical properties of an air release additive incorporated T700/VB-90 prepreg were evaluated. The quality and properties of the composite was improved.	Green hierarchical composites were manufactured by integrating UD regenerated cellulose fibres into PHB containing 2.5vt% NFC. Mechanical characterisation was done to study effect of NFC in the matrix	Recent developments in mode I and mode II interlaminar fatigue measurements and data analysis for carbon fiber reinforced composites are presented.	Two micromechanical models for 3D smart composites with embedded periodic grid of generally orthotropic reinforcements/actuators are developed and applied to cubic grid-reinforced composite structures
17:10	A FLOATING NODE METHOD FOR MODELLING MULTIPLE DISCONTINUITIES WITHIN AN ELEMENT	INVESTIGATION OF THE PROPERTIES OF CARBON FIBER / EPOXY COMPOSITE LAMINATES FABRICATED WITH CO-RFI PROCESS	MOISTURE ABSORPTION OF GLUTEN POLYMERS AND FLAX/GLUTEN COMPOSITES	PREDICTION OF FATIGUE DAMAGE EVOLUTION IN MULTIDIRECTIONAL LAMINATES	SHAPE MEMORY POLYPER BASED NANOCOMPOSITE ACTUATORS
	Silvestre T Pinho(Imperial College of Science), Bo Yang Chen(Imperial College of Science), Pedro M Baiz(Imperial College of Science), Nelson V De carvalho(National Institute of Aerospace), Tay T Earn(National University of Singapore)	Xuqiang Ma(Beihang University), Yizhuo Gu(Beihang University), Min Li(Beihang University), Yanxia Li(Beijing University of Aeronautics and Astronautics), Zuoguang Zhang(Beijing University of Aeronautics and Astronautics)	Nhan Vo hong(Katholieke Universiteit Leuven), Aart Willem Van vuure(Katholieke Universiteit Leuven), Peter Van puyvelde(Katholieke Universiteit Leuven), Ignaas Verpoest(Katholieke Universiteit Leuven)	Marino Quaresimin(University of Padua), Paolo Andrea Carraro(University of Padua)	Qing-qing Ni(Shinshu University)
	We propose a new numerical method for modelling multiple cracks within one element. We use extra nodes to represent extra material points but do not require integrating only part of an element.	Properties of co-RFI laminates with different process procedures were investigated. The effects of factors above on laminate quality and mechanisms were discussed by mechanical test and SEM photos.	The aim of this research is to study the moisture absorption behavior of gluten polymers and flax/gluten composites. Different levels of moisture absorption lead to change mechanical performance.	A prediction model for the crack density evolution in a MD laminate under fatigue is presented. Crack onset is assumed to be controlled by the matrix-dominated fat, behavior of the single UD lamina	The shape memory polymer based nanocomposites as actuator materials were developed and they have shown a good mechanical properties and electroactive actuation.
17:30	FLOATING NODE METHOD AND VIRTUAL CRACK CLOSURE TECHNIQUE FOR MODELING MATRIX CRACKING-DELAMINATION MIGRATION	VACUUM BAG ONLY MANUFACTURING OF HONEYCOMB SANDWICH PANELS	THE EFFECT OF FIBER MICROSTRUCTURE AND FIBER-MATRIX INTERFACIAL ADHESION ON MECHANICAL PROPERTIES OF COIR FIBRE COMPORTES	INFINITE LIFE OF CFRP EVALUATED NONDESTRUCTIVELY WITH X-RAY-REFRACTION TOPOGRAPHY	ASYMPTOTIC HOMOGENIZATION MODELING OF MAGNETO-ELECTRIC SMART
	Nelson V De carvalho(National Institute of Aerospace), Bo Yang Chen(Imperial College of Science), Silvestre T Pinho(Imperial College of Science), Petro M Baiz(Imperial College of Science), James Gordon Ratcliffe(National Institute of Aerospace), Tay T Earn(National University	James Kratz(McGill University), Pascal Hubert(McGill University)	Le Quan Rgoc Tran(Katholieke Universiteit Leuven), Carlos Anibal Fuentes(Katholieke Universiteit Leuven), Christine Dupont- gillain(Universite Catholique de Louvain), Aart Willem Van vuure(Katholieke Universiteit Leuven), Ignaas Verpoest(Katholieke	Volker Trappe(BAM Federal Institute for Materials Research and Testing), Hans Peter Ortwein(BAM-Federal Institute for Materials Research & Testing), Stefan Hickmann(BAM-Federal Institute for Materials Research & Testing)	Alexander L. Kalamkarov(Dalhousie University)
	Virtual Crack Closure Technique and Floating Node Method are combined to model multiple crack growth and interaction, without re-meshing, and applied to predict matrix cracking- delamination migration.	A simple analytical model to predict disbonds and delaminations during oven cure is validated with embedded miniature pressure sensors in an effort to produce consistent, predictable honeycomb panels.	The aim of this paper is to investigate the influence of fiber microstructure, fiber properties and fiber-matrix interfacial adhesion on the final properties of coir fiber composites.	CFRP are assumed to have an infinite life at the nowadays design strain-level for arithmers. This was investigated by fatigue tests up to 10^8 load cycles and X-ray-refraction NDT measurements.	A comprehensive micromechanical model for the analysis of piczo-magneto-thermo-elastic smart composites with orthotropic constituents is developed on the basis of the asymptotic homogenization method.
17:50	ANALYSIS OF CRACK MIGRATION IN LAMINATED COMPOSITES USING CONVENTIONAL AND MESH- INDEPENDENT COHESIVE ZONE MODELS	EFFECT OF LAYUP AND PLY MORPHOLOGY ON VOID FORMATION IN OUT-OF-AUTOCLAVE PREPREGS		DEVELOPMENT OF CYCLIC DAMAGE IN CARBON EPOXY COMPOSITES UNDER VARIABLE LOADING CONDITIONS	ELECTRICAL BEHAVIOR OF A CFRP UNIDIRECTIONAL LAMINATE UNDER TEMPERATURE VARIATION
	Maria Francesca Pernice(University of Bristol), Luiz Kawashita(Cardiff University), Stephen Richard Hallett(University of Bristol)	Timotei Centea(McGill University), Mathieu Preau(McGill University), Pascal Hubert(McGill University)		Alan Plumtree(University of Waterloo), Jan Dahl(University of Waterloo)	Kosuke Takahashi(Tokyo Institute of Technology), Takahiro Fujimura(Tokyo Institute of Technology), Kazuaki Inaba(Tokyo Institute of Technology), Kikuo Kishimoto(Tokyo Institute of Technology)
	Cohesive interface elements and a novel mesh-independent cohesive zone model are used to investigate the crack migration phenomenon in laminated composites for aerospace applications.	Defect formation in out-of-autoclave processing is studied by evaluating the impact of ply morphology and layup on void shape, size and location in parts cured under ideal and deficient conditions.		Constant and variable amplitude loading on the damage accumulation in $t_{2}(z)Sz$ angle-ply and $(4z)S$ off-axis carbon- epoxy laminates has been investigated by monitoring the progressive strain changes	Electrical resistance of CFRP unidirectional laminate was measured in heated condition, and it was evaluated in terms of temperature coefficient of resistivity and thermal expansion.
18:10	AN ANALYTICAL MODEL FOR THE MECHANICAL RESPONSE OF DISCONTINUOUS COMPOSITES	MESO-SCALE MULTIPHYSIC MODELLING OF THE WET FILAMENT WINDING PROCESS		FATIGUE DAMAGE CHARACTERIZATION IN SHORT GLASS FIBER REINFORCED POLYAMIDE-66	
	Soraia Pimenta(Imperial College of Science), Paul Robinson(Imperial College of Science)	Hugo Faria (INEGI - Institute of Mechanical Engineering and Industrial Management), Francisco Manuel Pires (University of Porto), António Torres Marques (University of Porto)		Muhamad fatikul Arif(Arts et Metiers Paris Tech), Nicolas Saintier(Ecole Nationale Superieure d'Arts et Metiers de Paris), Fodil Meraghni(Ecole Nationale Superieure d'Arts et Metiers de Paris), Yves Chemisky(Arts et Metiers ParisTech), Joseph Fitoussi(Ecole Nationale Superieure d'Arts et	
	An analytical model, based on a fracture-mechanics consistent shear-lag theory, is developed to investigate the potential of aligned discontinuous composites to present a pseudo-ductile response.	The wet filament winding process was modelled in detail. The several physical phenomena interacting at the layer/laminate level were described and a meso-scale overall original model was established.		Fatigue of short glass fiber reinforced polyamide 66 composite (PA66-GF30) is investigated by in-situ temperature field monitoring together with 3D damage evaluation by X-Ray tomography	
18:30		•	End	•	•

	Room 525	Room 520f	Room 520be		Room 516ab
16:30			BREAK		
	STRUCTURAL HEALTH MONITORING	MULTI-SCALE MODELING 3			MODELING II - POSTER
	Chairs: Pierre Mertiny, Andrew Johnston	Chair: Martin Lèvesque			Chair: Alireza Forghani
16:50	DETECTION OF DEFECTS IN COMPOSITE	FREE EDGE ANALYSIS OF CFRP LAMINATES BASED		16:50	ANALYSIS OF THE CRITICAL MOMENT TRIGGERING OFF SNAP-THROUGH OF BISTABLE COMPOSITE
	STRUCTURES WITH 3D LASER VIBROMETER	ON A HOMOGENIZATION THEORY FOR TIME- DEPENDENT COMPOSITES			WITH INTIALTIAL CURVATURE
					Jong-gu Lee, Junghyun Ryu, Seung-won Kim, Kyu-jin Cho, Maenghyo Cho
	Patrick Peres(ASTRIUM Space Transportation), David	Keita Goto(Tsukuba University), Tetsuya Matsuda(Tsukuba		16:54	ADHESION EVALUATION IN CARBON FIBER AND CONCRETE MATRIX COMPOSITES
	Barnoncel(ASTRIUM Space Transportation), Wieslaw Jerzy Staszewski(Technical University of Cracow)	University)			Gerson Marinucci, Reinaldo Leonel Caratin
				16:58	MULTISCALE DAMAGE MODELING FOR HIGHLY-FILLED PARTICULATE COMPOSITES: PARTICLE SIZE
	This paper presents the study performed with a 3D Laser with a sequence of the study performed with a sequence of	In this study, microscopic stress and strain distributions around free edges of a CEPP leminate are applying three dimensionally			EFFECT AND COUPLING WITH FINTLE STRAINS
	defects by scanning the composite skin of a cryogenic tank.	based on a time-dependent homogenization theory.			Marion Trombini, Carole Nadot-martin, Damien Halm, Gérald Contesse, Alain Fanget
				17:02	TRANSVERSE MECHANICS OF UNIDIRECTIONAL TEXTILE FIBROUS MATERIALS
					William Caster, Christiane Wagner-kocher, Stéphane Fontaine, Artan Sinoimeri, Guillaume Perie
17:10	IMPACT LOCALIZATION IN ANISOTROPIC COMPOSITE PLATES INTRUMENTED WITH A			17:06	ENHANCED FILAMENT WINDING SIMULATION FOR IMPROVED STRUCTURAL ANALYSIS OF COMPOSITE PRESSURE VESSELS
	NETWORK OF PIEZOELECTRIC SENSORS				
					Jorg Bernnard Multhon
	Andre fuiz De aguiar Ribeiro(Universidade Estadual de Campinas), Carlos Alberto Cimini Jr(Universidade Federal de			17:10	MICRO-MACKO APPROACH FOR PREDICTING LOCALIZED STRESS DISTRIBUTION IN COMPOSITES
	Minas Gerais), Niederauer Mastelari(Universidade Estadual de				Saurani Gupta, Ganesh Soni, Kanesh Kunai Singi STATISTICAL ANALVSIS AND MECHANICAL BEHAVIOD FOD DOLVDDODVLENE COMDOSITES DEINEODOFD
	Campinas) This paper proposes a methodology to evaluate impact			17:14	WITH BENZOYLATED SUGARCANE FIBERS
	localization in composite plates instrumented with piezoelectric				Rosineide Miranda Leão
	sensors. Preliminary trials presented encouraging results.				LONG TERM DURABILITY OF UNIDIRECTIONAL CFRP USING TOUGHENED MATRIX RESIN
				1/:16	Shunnosuke Ohta, Masavuki Nakada, Yasushi Mivano, Takavuki Matsumoto
17:30	RELEVANCE OF ENVIRONMENTAL INFLUENCES FOR	L		17.99	PREDICTION OF OPEN HOLE COMPRESSIVE FAILURE FOR QUASI-ISOTROPIC CFRP LAMINATES BY
1/100	LAMB WAVE BASED SHM WITH PIEZOELECTRIC			1/.22	MMF/ATM METHOD
	ELEMENTS				Tatsuya Hioki, Masayuki Nakada, Yasushi Miyano, Hisaya Katoh
	Konstantin Jonas Schubert(Faserinstitut Bremen e.V.), Oliver			17:26	NUMERICAL STUDY OF COMPACTION INFLUENCE ON SPRING-IN OF THIN COMPOSITE COMPONENTS
	Focke(Faserinstitut Bremen e.V.), Axel Siegfried				MANUFACTURED BY VACUUM BAG PROCESS
	riermann(Universität Brenien)				Costanzo Bellini, Luca Sorrentino
	This paper discusses environmental influences on Lamb Waves			17:30	USE SANDWICH COMPOSITES TO MAKE PASSENGER CAR COMPONENTS FOR RAIL TRAIN APPLICATION
	structures				
					Wenguang Ma
				17:34	ANALYSIS OF BI-STABILITY AND RESIDUAL STRESS RELAXATION IN HYBRID UNSYMMETRIC
17:50	STRUCTURAL HEALTH MONITORING IN COMPOSITE STRUCTURES USING EMBEDDED WIRE SENSORS	2			
					FUNOR DAI
	Biama Martinu(University of Albarta) Martin Oskar(University			17:38	MODELLING OF THE THERMO-MECHANICAL PROPERTIES OF WOVEN COMPOSITES DURING THE CURE
	of Alberta), Christian Hansen(Universitat Hannover), Cagri				Loleï Khoun Pascal Hubert Krishna S Challagulla
	Ayranci(University of Alberta)				
	The present contribution reviews and reports on low-cost				
	structural health monitoring systems for fiber-reinforced				
	polymer composite components based on embedded metallic wires/filaments.				
18:10					
10.00			End		
10.30			Enu		

	Room 515	Room 519a	Room 710	Room 524ab	Room 524c
7:30 8:30		PLENARY (Room 710) - Anthony	y Wass: "Virtual Testing of Composites	s: Opportunities and Challenges".	
	CARBON MATRIX & BRAIDED COMPOSITES Chairs: Zhengwei Zhou, Guodong Fang	MULTIFUNCTIONAL COMPOSITES SYMPOSIUM 9 Chair: Nicolas Kotov	APPLICATIONS 1 Chairs: Isabelle Paris, Simon Joncas	FRACTURE AND DAMAGE 9 Chairs: Goich Ben, Chandra Veer Singh	TEXTILE COMPOSITES 5 Chairs: Alistair McIlhagger, Brian George Falzon
9:30	STRENGTH ANALYSIS OF 3D AXIAL BRAIDED COMPOSITES	MANUFACTURING OF PREPREG WITH MICROCAPSULES FOR SELF HEALING COMPOSITES	APPLICATIONS OF COMPOSITE TECHNOLOGIES TO AEROSPACE SYSTEMS IN KARI	THERMOGRAPHIC EVALUATION OF CFRP SPECIMENS DRILLED WITH CONVENTIONAL AND ABRASIVE WATER JET TECHNIQUES	PREDICTING THE CONSTITUTIVE BEHAVIOR OF BIAXIAL BRAIDED COMPOSITES USING BEAM UNIT CELLS
	Guodong Fang(Harbin Institute of Technology)	Sang yup Kim(University of Illinois at Urbana-Champaign), Nancy R Sottos(University of Illinois at Urbana-Champaign), Scott R White(University of Illinois at Urbana-Champaign)	Seung Jo Kim (Korea Aerospace Research Institute)	Muhammad Saleem(Ryerson University), Lotfi Toubal(University of Quebec at Trois Rivieres), Redouane Zitoune(Institut Clément Ader), Habiba Bougherara(Ryerson University)	Joerg Cichosz(Technische Universitat Munchen), Johannes Bueckle(Technische Universitat Munchen), Roland Hinterhoelz(Technische Universitat Munchen), Markus Wolfahrt(Polymer Competence Center Leoben)
	The biaxial compressive and tensile strengths of axial braided composites are studied. A damage model of the composites is utilized to calculate the failure stress.	Self healing prepreg consists of E-glass fiber and diglycidyle Ether of bisphenol F resin together with polymeric microcapsules containing a core of the solvent ethyl phenylacetate was developed.	Composite technologies like CFRP (Carbon Fiber Reinforced Plastics) have provided a lot of solutions for aerospace systems of KARI seeking light weight and extreme temperature and load endurance.	The difference in the mechanical behavior of the specimens during fatigue testing is mainly attributed to the machining process. This was confirmed by SEM and surface roughness tests.	Finite element unit cells with beam elements representing the yarns are used to predict the linear and nonlinear constitutive response of biaxial braided composites.
9:50	THROUGH-THICKNESS COMPRESSION BEHAVIOR OF A 2,5D CARBON/CARBON COMPOSITE	MULTILAYER COMPOSITES WITH SELF-HEALING CAPABILITY BASED ON AN EMAA IONOMER		BENDING STIFFNESS OF LAMINATES WITH INTRALAMINAR CRACKS IN SURFACE LAYERS AND INTERFACE DELAMINATIONS	BEARING BEHAVIOR OF 3D WOVEN COMPOSITES
	Marie Poitrimolt(Institut Clément Ader), Mohammed Cheikh(Universite de Toulouse-le-Mirail (Toulouse II)), Gérard Bernhart(Institut Clément Ader)	Antonio Mattia Grande, Luca Castelnovo, Luca Di landro Giuseppe Sala (Polytechnic Institute of Milan), Cinzia Giacomuzzo, Alessandro Francesconi (University of Padua)		Janis Varna(Lulea University of Technology), Andrejs Pupurs(Lulea University of Technology), Liva Pupure(Lulea University of Technology)	Michael P Mcclain(Albany Engineered Composites), Nikolay Timoshchuk(Albany Engineered Composites), Jon Goering(Albany Engineered Composites), Chris Redman()
	We investigate here the through-thickness mechanical behavior of a carbon/carbon composite by monotonic and cyclic compression tests in order to characterize the elastic and damageable domains.	In this research, the SH behavior of different multilayer composites, based on an ionomer with different backing materials was investigated under ballistic impact conditions.		Theoretical approach to bending stiffness determination of laminates with intralaminar cracks and interlayer delaminations is presented and validated in experiments.	Investigated the bearing and pull through response, as function of tow size and preform architecture, of 3D woven composites molded using the Resin Transfer Molding (RTM) process.
10:10	EFFECTS OF CURE PRESSURE ON VOID CONTENT AND ULTRASONIC ATTENUATION COFFEICIENT OF	SELF-HEALING OF A FIBRE REINFORCED POLYMER COMPOSITE MATERIAL USING METAL TRIFLATES	APPLICATION OF X-WEB TECHNOLOGIES FOR IMPROVED SHEAP TRANSFER IN WIND TURBINE	SYNERGISTIC DAMAGE MECHANICS MODELING OF	MULTI-FUNCTIONAL CARBON FIBER FLAT TAPE FOR COMPOSITES
	CARBON FIBRE REINFORCED COMPOSITE	AS CATALYTIC CURING AGENTS	BLADES UPWARDS OF 100 METERS	LAMINATES	
	Yalin Yu(Beihang University)	Tim S Coope(University of Bristol), Ian P Bond(University of Bristol), Richard S Trask(University of Bristol), Duncan F Wass(University of Bristol)	Ryan Michael Barnhart(Wetzel Engineering Inc.), Kyle Wetzel(Wetzel Engineering Inc.)	Chandra veer Singh(University of Toronto)	Vivek Koncherry(University of Manchester), Prasad Potluri(University of Manchester), Anura Fernando(University of Manchester)
	A method is established through controlling cure pressure. Exponentially decreasing relationships are obtained between the void content, cure pressure and ultrasonic attenuation coefficient.	A novel self-healing (SH) high performance FRP composite material is investigated using a novel Lewis acid-catalysed SH system and a bio-inspired vascular architecture to restore fracture toughness.	An alternative shear web design is presented here, capable of both reducing sandwich core and resin uptake weight, and increasing structural efficiency in utility scale wind turbine blades.	We describe a new approach for predicting progressive damage and failure in multidirectional composites. Its implementation into ABAQUS and practical examples will be presented in the conference.	This paper presents manufacturing systems for producing metalized carbon fibre tows, which can be used in the DCFP process for manufacturing automotive composites.
10:30	THERMAL ANALYSIS AND MICROSTRUCTURE OF FURFURAL ACETONE RESIN-DERIVED CARBON	AUTONOMOUS RESTORATION OF ELECTRICAL INTERFACES	DELAMINATION ARREST FASTENERS IN AIRCRAFT COMPOSITE STRUCTURES	DEPENDENCE OF INTERFACE PLY ORIENTATION ON DELAMINATION GROWTH DIRECTIONALITY AND MIGRATION	STUDY OF BRAID TOPOLOGY AND EFFECT OF BRAID PATTERN ON COMPOSITE PROPERTIES
	Zhengwei Zhou(Shanghai University), Aijun Li(Shanghai University), Ruicheng Bai(Shanghai University), Jinliang Sun(Shanghai University), Musu Ren(Shanghai University), Hong Li(Shanghai University)	Nancy R Sottos(University of Illinois at Urbana-Champaign)	Kuen-yuan Lin(University of Washington), Luke I Richard(University of Washington), Wenjing Liu(University of Washington)	Carla Canturri(Imperial College of Science), Emile Smith Greenhalgh(Imperial College of Science), Silvestre T Pinho(Imperial College of Science)	Sabahat Nawaz(University of Manchester), Prasad Potluri(University of Manchester), Sree shankhachur Roy(University of Manchester), Mayank Gautam(University of Manchester)
	TGA was applied to study the heat resistance of furfural-acetone resin. XRD was used to investigate the evolution of structure after carbonization. SEM was utilized to observe the fracture morphology.	This abstract presents an approach to restore conductance in composite electrodes via the use of microencapsulated nanoparticles that form a conductive network when released.	This paper investigates the effectiveness of fasteners as delamination arrest feature. Fracture analyses were performed to determine delamination growth in the presence of the fasteners.	Experimental evidence shows that delamination propagates preferentially in the direction of one ply at the interface. If directionality cannot be met, migration to neighbouring ply interfaces ensues.	Braid topology is the pattern of the interlacement of yarns in braided structures. The proposed methods are to generate braid patterns with the removal of any bobbins from the braiding machine.
10.20		1	BREAK		1
10.00			DIVERIN		

Processor PLEXARY (Room 7/a) - Anathony Wass: "Virtual Testing of Composites: Opportunities and Challenges". Chair: Congression (Congression) 939 INVENTIGATION (Congression) INVENTIGATION (Congression) INVENTIGATION (Congression) INVENTIGATION (Congression) 949 INVENTIGATION (Congression) INVENTIGATION (Congression) INVENTIGATION (Congression) INVENTIGATION (Congression) 949 INVENTIGATION (Congression) INVENTIGATION (Congression) <tdi< th=""><th></th><th>Room 522</th><th>Room 518ab</th><th>Room 520ad</th><th>Room 519b</th><th>Room 520c</th></tdi<>		Room 522	Room 518ab	Room 520ad	Room 519b	Room 520c
Outset LINE AND MULTING NY Description ALTIONATION ONE TISS ALTIONATION ONE TISS 9-30 ALTIONATION ONE TISS ALTION	7:30 8:30		PLENARY (Room 710) - Anthony	v Wass: "Virtual Testing of Composites	s: Opportunities and Challenges".	Chair: Gregory Odegard
9:30 MAX MUSE CONTACT LAW NULLINK: RECTURE TO THE DESCRIPTION OF THE TAXABLE DATA AND AND TECHNICAL OF THE DESCRIPTION OF THE TAXABLE DATA AND AND TECHNICAL OF THE DESCRIPTION OF THE TAXABLE DATA AND AND TECHNICAL OF THE DESCRIPTION OF THE TAXABLE DATA AND AND TECHNICAL OF THE DESCRIPTION OF THE TAXABLE DATA AND AND TECHNICAL OF THE DESCRIPTION OF THE TAXABLE DATA AND AND TECHNICAL OF THE DESCRIPTION OF THE TAXABLE DATA AND AND TECHNICAL OF THE DESCRIPTION OF THE TAXABLE DATA AND AND TECHNICAL OF THE DESCRIPTION OF THE TAXABLE DATA AND AND TECHNICAL OF THE DESCRIPTION OF THE TAXABLE DATA AND AND TECHNICAL OF THE DESCRIPTION OF THE TAXABLE DATA AND AND TECHNICAL OF THE DESCRIPTION OF THE TAXABLE DATA AND AND TECHNICAL OF THE DESCRIPTION OF THE TAXABLE DATA AND AND TECHNICAL OF THE DESCRIPTION OF THE TAXABLE DATA AND AND TECHNICAL OF THE DESCRIPTION OF THE TAXABLE DATA AND AND TECHNICAL OF THE DESCRIPTION OF THE TAXABLE DATA AND AND TECHNICAL OF THE DESCRIPTION OF THE TAXABLE DATA AND AND TECHNICAL OF THE DESCRIPTION OF THE TAXABLE DATA AND AND TECHNICAL OF THE DESCRIPTION OF THE TAXABLE DATA AND AND TECHNICAL OF THE DESCRIPTION OF THE TAXABLE DATA AND AND TECHNICAL OF THE DESCRIPTION OF THE TAXABLE DATA AND AND TECHNICAL OF THE DESCRIPTION OF THE TAXABLE DATA AND AND TECHNICAL OF THE DESCRIPTION OF THE TAXABLE DATA AND AND TECHNICAL OF THE DESCRIPTION OF THE TAXABLE DATA AND AND TECHNICAL OF THE DESCRIPTION OF THE TAXABLE DATA AND AND TECHNICAL OF THE DESCRIPTION OF THE TAXABLE DATA AND AND TECHNICAL OF THE DESCRIPTION OF THE TAXABLE DATA AND TECHNICAL OF THE DESCRIPTION OF THE TAXABLE DATA AND TECHNICAL OF THE DESCRIPTION OF THE TAXABLE DATA AND TECHNICAL OF THE TAXABLE DATA		MODELLING AND SIMULATION IX Chairs: R. Byron Pipes, Thomas Gereke	PROCESSING I Chairs: Ralf Schledjewski, Tohru Morii	AUTOMATED COMPOSITES MANUFACTURING I Chairs: Stephen W. Tsai, Ewald Fauster	FATIGUE OF COMPOSITES 5 Chairs: Karl Schulte, Volker Trappe	HEALTH MONITORING 1 Chair: Dineshkumar Harursampath
 Note::::::::::::::::::::::::::::::::::::	9:30	A MIXED MODE COHESIVE LAW INCLUDING INTERFACE DILATATION UNDER NEAR MODE II FRACTURE	DEVELOPMENT OF FIBER TOW SPREADING SYSTEM AND ITS APPLICATION FOR THIN FIBER REINFORCED MATERIALS	FORM-FLEXIBLE HANDLING TECHNOLOGY FOR AUTOMATED PREFORMING	INFLENCE OF NOTCH GEOMETRY ON BENDING FATIGUE BEHAVIOR OF TWILL E-GLASS/EPOXY COMPOSITE	DELAMINATION DETECTION OF ROTORCRAFT FLEX BEAM USING FRACTAL DIMENSIONS
 Bark Jack Jack Jack Jack Jack Jack Jack Jac		Bent F Sørensen(Technical University of Denmark), Stergios Goutianos(Technical University of Denmark)	Tohru Morii(Shonan Institute of Technology), Masaaki Shimaba(Shonan Institute of Technology), Masahiro Mogi(ITO Yacht Sails LTD)	Christian Löchte, Holger Kunz, Raphael Schnurr, Franz Dietrich, Annika Raatz, Klaus Dilger, Klaus Dröder (Technische Universitat Carolo-Wilhelmina Braunschweig)	Giovanni Belingardi(Polytechnic Institute of Turin), Alem Tekalign Beyene(Polytechnic Institute of Turin), Ermias Gebrekidan Koricho(Polytechnic Institute of Turin)	Keshava Kumar s(Indian Institute of Science), Ranjan Ganguli(Indian Institute of Science), Dineshkumar Harursampath(Indian Institute of Science)
9.50 CREEKENTIES IN THE PERSISTENCE AT LEASE NEED HARVES FLAT HEAVENTIES IN THE ADVANCES FLAT		Under Mode II, a fracture process zone can induce a displacement normal to the cracking plane. A potential function based mixed mode cohesive law is developed and implemented in a FE program.	This study proposed the newly developed fiber tow spreading system and discussed the effect of spread fiber on mechanical properties of thin fiber reinforced material.	This paper introduces a novel form-flexible gripping and handling technology which is designed to empower today's RTM production processes to fabricate preforms in an automated way.	The effect of notch geometry on bending fatigue behavior of E- glass/epoxy composite with different type of notches geometry considered for the study.	The present article addresses the issue of partial delamination in rotorcraft flexbeams, and applicability of fractal dimensions for edge delaminations is evaluated.
Notes	9:50	UNCERTAINTIES IN THE PREDICTION OF CFRP LAMINATE PROPERTIES IN THE CONTEXT OF A RELIABILITY BASED DESIGN APPROACH	LASER WELDING MODELLING FOR THERMOPLASTIC COMPOSITE AND DEVELOPMENT OF AN ADAPTED MATERIAL CHARACTERIZATION METHOD	FORM-FLEXIBLE HEATING DEVICES FOR INTEGRATION IN A PREFORM GRIPPER	PREDICTING FATIGUE DAMAGE DEVELOPMENT FOR BRAIDED CARBON FIBER POLYMER MATRIX COMPOSITES	STRUCTURAL HEALTH MONITORING (SHM) OF COMPOSITE AEROSPACE STRUCTURES USING LAMB WAVES
Instrument Instrument <th></th> <td>Conny Schillo(Technische Universitat Hamburg-Harburg), Dieter Krause(Technische Universitat Hamburg-Harburg)</td> <td>Mylene Deleglise(Ecole des Mines de Douai), Benoit Cosson(Ecole des Mines de Douai)</td> <td>Holger Kunz, Christian Löchte, Fabian Fischer, Klaus Dröder, Klaus Dilger (Technische Universitat Carolo-Wilhelmina Braunschweig)</td> <td>John Montesano(Ryerson University), Zouheir Fawaz(Ryerson University), Martin Lévesque(Ecole Polytechnique de Montreal), Cheung J Poon(Ryerson University)</td> <td>Shashank Pant(Carleton University), Jeremy Laliberte(Carleton University), Marcias Martinez(Delft University of Technology)</td>		Conny Schillo(Technische Universitat Hamburg-Harburg), Dieter Krause(Technische Universitat Hamburg-Harburg)	Mylene Deleglise(Ecole des Mines de Douai), Benoit Cosson(Ecole des Mines de Douai)	Holger Kunz, Christian Löchte, Fabian Fischer, Klaus Dröder, Klaus Dilger (Technische Universitat Carolo-Wilhelmina Braunschweig)	John Montesano(Ryerson University), Zouheir Fawaz(Ryerson University), Martin Lévesque(Ecole Polytechnique de Montreal), Cheung J Poon(Ryerson University)	Shashank Pant(Carleton University), Jeremy Laliberte(Carleton University), Marcias Martinez(Delft University of Technology)
10:10 PROMAILING OF THE FROCESS INCLUSION INTERNAL AND EXPERIMENTAL INVESTIGATIONS INCLUSION INTERNAL AND EXPERIMENTAL INVESTIGATIONS INCLUSION INTERNAL ASPECTS AND MULTICALLE INTERNAL ASPECTS AND MULTICALLE INTERNAL ASPECTS AND MULTICALLE INTERNAL ASPECTS AND MULTICALS. INTERNAL ASPECTS AND MULTICALS. INTERNAL AND EXPERIMENTAL INVESTIGATIONS INTERNAL ASPECTS AND MULTICALS. INTERNAL ASPECTS AND MULTICALS.		Uncertainties related to the prediction of laminate properties originating from different scales are quantified and the effect on a reliability statement is illustrated through a simple beam problem	An original method to model the laser welding process for thermoplastic composites materials is propos, based on ray tracing method using a numerical representation of the microstructure variability	Different heating technologies for the integration into a form- flexible handling and draping device for preform manufacturing are presented and discussed.	A prediction model is presented which simulates fatigue damage development in braided PMCs. The model is implemented into a commercial finite element package.	Full derivation of Lamb wave equations for monoclinic composite laminates based on linear 3-D elasticity and partial wave techniques is presented.
Intel Brand Taching University of Demands, Longer Tang Reg. WingSteeled Missional displacements of the University of Demands, Conc. The WingSteeled Missional displacements of the University of Demands, Conc. The WingSteeled Missional displacements of the University of Demands, Conc. The WingSteeled Missional displacements of the University of Demands, Conc. The WingSteeled Missional displacements of the University of Demands, Conc. The WingSteeled Missional displacements of the University of Demands, Conc. The WingSteeled Missional displacements of the University of Demands, Conc. The WingSteeled Missional displacements of the University of Demands, Conc. The WingSteeled Missional displacements of the University of Demands, Conc. The WingSteeled Missional displacements of the University of Demands, Conc. The WingSteeled Missional displacements of the University of Demands, Conc. The WingSteeled Missional displacements of the University of Demands, Conc. The WingSteeled Missional displacements of the University of Demands, Conc. The WingSteeled Missional displacements of the University of Demands, Conc. The WingSteeled Missional displacements of the University of Demands, Conc. The WingSteeled Missional displacements of the University of Demands, Conc. The WingSteeled Missional displacements of the University of Demands, Conc. The WingSteeled Missional displacements of the University of Missional displacements of the University of Demands, Conc. The WingSteeled Missional displacements of the University of Demands, Conc. The WingSteeled Missional displacement of the University of Demands, Conc. The WingSteeled Missional displacement of the University of Demands, Conc. The WingSteeled Missional displacement of the University of Demands, Conc. The WingSteeled	10:10	PROBABILISTIC MODELLING OF THE PROCESS INDUCED VARIATIONS IN PULTRUSION	NUMERICAL AND EXPERIMENTAL INVESTIGATIONS OF CONTINUOUS FIBRE REINFORCEMENTS AND THERMOPLASTIC RESIN (CFRTP) FORMING	LOW-ENERGY ELECTRON BEAM CURED THERMOSET TAPE PLACEMENT	EXPERIMENTAL ASPECTS AND MULTISCALE NUMERICAL DESCRIPTION OF THE FATIGUE BEHAVIOR OF FIBER REINFORCED POLYMERS	THERMAL AND ULTRASONICS DAMAGE MONITORING AND CHARACTERIZATION IN WOVEN COMPOSITES
Itic paper investigates the effects of uncertainties in the public states and distortions. To improve the understanding of CPRTP forming, the numerical single and nervo out-of-and/output faintiation investigates and distortions. An effective inferrometation is an and an evo out-of-and/output faintiation investigates and distortions. The present paper highlights the contribution of passing induced residual states as and distortions. The present paper highlights the contribution of passing induced residual states as and distortions. The present paper highlights the contribution of passing induced residual states as and distortions. The present paper highlights the contribution of passing induced residual states as and distortions. The present paper highlights the contribution of passing induced residual states as and distortions. The present paper highlights the contribution of passing induced residual states as and distortions. The present paper highlights the contribution of passing induced residual states as and distortions. The present paper highlights the contribution of passing induced residual states are and distortions. The present paper highlights the contribution of passing induced residual states are and distortions. The present paper highlights the contribution of passing induced residual states are and distortions. The present paper highlights the contribution of passing induced residual states are and distortions. The present paper highlights the contribution of passing induced residual states are part i		Ismet Baran(Technical University of Denmark), Jesper Henri Hattel(Technical University of Denmark), Cem C Tutum(Technical University of Denmark)	Peng Wang(Ecole Nationale Superieure des Arts et Industries Textiles), Nahiene Hamila(Institut National des Sciences Appliquees de Lyon), Philippe Boisse(Institut National des Sciences Appliquees de Lyon)	Dilmurat Abliz(Technische Universitat Clausthal), Yugang Duan(Xian Jiaotong University), Xinming Zhao(Xian Jiaotong University), Xiaolong Liu(Xian Jiaotong University), Dichen Li(Xi'an Jiaotong University)	Daniel Krause(Deutsches Zentrum fuer Luft- und Raumfahrt e.V. (DLR), Gordon Just(Deutsches Zentrum fuer Luft- und Raumfahrt e.V. (DLR)), Janko Kreikemeier(Deutsches Zentrum fuer Luft- und Raumfahrt e.V. (DLR))	Jean-michel Roche(ONERA)
10:30 SOLD MECHANICS-BASED SIMULATION OF COMPOSITE FORMING WITH STRESS RELAXATION IN THE DRY FABRIC RELIVEDRCEMENT AND RESIN CURING Mojtaba Komelii(University of British Columbia), Abbas Milan(University of British Columbia), Abbas BADES Kuangvi Zhang(University of British Columbia), Abbas Milan(University of British Columbia), Abbas Kuangvi Zhang(University of Manchester) A simplified modeling framework is shown to study the effect of cure progression and/or stress relaxation of dry wown fabric reinforcements during composite forming simulations. The biaxial fatigue properties of ±45° glassfbre-based composites (1±45/4s, [±45/06]s, [±		This paper investigates the effects of uncertainties in the pultrusion process parameters (a total of 29) on the process induced residual stresses and distortions.	To improve the understanding of CFRTP forming, the numerical and experimental studies are presented. Thermoforming simulation is validated, which can predict the feasibility condition of process.	An new out-of-autoclave fabrication process for thermoset composites-integrating automated fiber placement process with a low-energy electron beam (150 KeV) layer-wise curing unit was explored.	An efficient micromechanical fatigue modeling framework is introduced. Results show characteristic damage behavior to be consistent with experimental observations from the literature.	The present paper highlights the contribution of passive infrared thermography and guided waves for in situ damage detection, monitoring and characterization in woven composites during tensile tests.
Image: Note Description of the Dest PABRIC ZEINFORCEMENT AND RESIN CURRING Molitaba Koneili(University of British Columbia), Abbas BLADES Molitaba Koneili(University of British Columbia), Abbas Nilami(University of British Columbia), Abbas A simplified modeling framework is shown to tudy the effect of the properties of 445° glassfibre-based composite forming simulations. The biaxial fatigue properties of 445° glassfibre-based composite forming simulations. Image: Zeine Description of Laber Seine Description and/or there reprograms a	10:30		SOLID MECHANICS-BASED SIMULATION OF COMPOSITE FORMING WITH STRESS RELAXATION		FATIGUE BEHAVIOURS OF ±45°GLASSFIBRE DOMINATED COMPOSITES IN WIND TURBINE	
A simplified modeling framework is shown to study the effect of cure progression and/or stress relaxation of dry woven fabric reinforcements during composite forming simulations. The biaxial fatigue properties of ±45" glassfibre-based composites ([±45]A9,[245]/00]2s layup structures) are focused, which used for wind turbine blade skin materials. Image: Comparise of the structure of			IN THE DRY FABRIC REINFORCEMENT AND RESIN CURING Mojtaba Komeili(University of British Columbia), Abbas Milani(University of British Columbia)		BLADES Kuangyi Zhang(University of Manchester)	
10:50 BREAK			A simplified modeling framework is shown to study the effect of cure progression and/or stress relaxation of dry woven fabric reinforcements during composite forming simulations.		The biaxial fatigue properties of ±45° glassfibre-based composites ([±45]4s, [±45/0]2s, [±45/0]2s layup structures) are focused,which used for wind turbine blade skin materials.	
10:50 BREAK						
10:50 BREAK						
10:50 BREAK						
	10:50			BREAK		

	Room 525	Room 520f	Room 520be		Room 516ab
7:30					
8:30		PLENARY (Room 710) - Anti	hony Wass "Virtual Testing of Compos	sites: On	nortunities and Challenges"
			iony wass. Virtual resting of compo	nees. op	Chair: Gregory Odegard
	IMPACT & DYNAMIC RESPONSES 1	BISTABLE LAMINATES	MODELLING OF PLATES & SHELLS 1		PROCESSING - POSTER
	Chair: Serge Abrate	Chairs: Mike Hyer, Marie-Laure Dano	Chairs: Georges Verchery, Farid Taheri		Chairs: Veronique Michaud, Marie-Claude Belanger
:30	A MECHANICAL MODEL FOR LAMINATED SHELLS WITH COHESIVE INTERFACES LOADED DYNAMICALLY	TIME AND TEMPERATURE DEPENDENCE ON THE	FEA BASED INITIAL DESIGN OF A COMPOSITE WIND	9:30	FABRICATION AND MECHANICAL PROPERTIES OF SELF-REINFORCED POLYESTER DOUBLE COVERED
	VERIFICATION AND APPLICATIONS	BISTABLE COMPOSITES	TORDINE BLADE		
	Francesca Campi(University of Genoa) Roberta	Christian Kirval(Technische Universitat Dresden) Maik	Owaieur rahman Shah(École Nationale Sunérieure de		Chang-mou wu
	Massabo(University of Genoa)	Gude(Technische Universitat Dresden), Werner A.	Techniques Avancés, Bretagne)	9:34	Olivier De almeida. Emeline Bessard. Gérard Bernhart
		Hufenbach(Technische Universitat Dresden)		0.08	STIMULUS RESPONSE POLYMER AND MULTIFUNCTIONAL COMPOSITES: CHALLENGES AND PROSPECTS
	The accuracy and some applications of a mechanical model	This study addresses the influence of temperature and	This study is creates a series of calculations for the initial design	9.30	
	formulated to study delamination damage evolution in	continuous switching operation for a longer duration on the	of a wind turbine blade, based on its length (i.e. intended power output) and the incident wind speed		Fabien Cara
	will be presented.	experimental setups	output) and the medicite while speed	9:42	TOWARDS COST-EFFECTIVE TEXTILE CHARACTERISATION: KEY PARAMETERS IN MATERIAL
					CHARACTERISATION
9:50	IKKEVERSIBLY ABSORBED ENERGY AND DAMAGE IN GFRP LAMINATES IMPACTED AT LOW-VELOCITY	A DESIGN STRATEGY FOR BI-STABLE UNSYMMETRIC COMPOSITE LAMINATES INDUCED	IMPROVEMENT OF LIMIT-BASED APPROACH TO STRESS ANALYSIS FOR ORTHOTROPIC COMPOSITE		Andrew Walbranen), Hannes Körber
		BY VIBRATION	CYLINDERS (0/90) SUBJECTED TO PURE BENDING	9:46	AUTOCLAVE FORMATION TECHNOLOGY FOR CFRTP BRAIDED T-SHAPED PIPE Tachikazu, Uchida, Kaichi, Bun, Akia, Obtani, Acami, Nakai
	Giuseppe Villani(University of Naple), Claudio Leone(University of	Atsuhiko, Senba(Nagoya University), Tadashige, Ikeda(Nagoya	Canhui Zhang(Xiamen University), Suong Hoa(Concordia	0.00	RELATIONSHIPS BETWEEN DEGREE OF SKILL, DIMENSION STABILITY AND MECHANICAL PROPERTIES
	Naples Federico II), Valentina Lopresto(University of Naples Federico	University)	University), Pei Liu(Xiamen University)	9:50	OF COMPOSITE STRUCTURE IN HAND LAY-UP METHOD
	Caprino(University of Naples Federico II), Giancarlo				T. Kikuchi, H. Hamada, A. Nakai, A. Ohtani, A. Goto, Y. Takai, T. Koshino, A.i Endo, C. Narita, A. Fudauchi
	Impact tests were carried out on basalt fibre reinforced plastic	The dynamics of a linear system that approximately express the	The limit-based approach is improved, where we take the	9:54	PROCESS ANALYSIS OF HAND LAY UP METHOD BY VARIOUS EXPERIENCE PERSONS
	laminates at the aim to investigate the ply by ply delamination and the absorbed energy	vibration of the first mode of the unsymmetric laminate with additional mass is investigated	derivatives for both sides of the identically satisfied equations to obtain their replacing equations	,,,,,	T. Kikuchi, H. Hamada, A. Nakai, A. Ohtani, A. Goto, Y. Takai, A. Endo, T. Koshino, C. Narita, A. Fudauchi
	and the absorbed energy.	additional mass is investigated.	obtain their replacing equations.	9:58	CURING KINETIC AND PROPERTIES OF MEHHPA /HYDANTOIN EPOXY RESIN SYSTEM
			BOOTBUOKI BIO ANALVOIO OF A COMBOOTE		Ling Li
0:10	IMPACT	MORPHING OF BISTABLE COMPOSITE LAMINATES	CYLINDRICAL PANEL WITH FRAMES AND OMEGA	10:02	CURE KINETIC OF ADHESIVE FOR KAPID REPAIR BY NON-ISOTHERMAL METHOD
			STRINGERS		A STUDY OF OUADRIAXIAL AND TRIAXIAL COMPOSITE TUBES DEVELOPED BY BRAID-WINDING
	Serge Abrate(Southern Illinois University at Carbondale)	Samer Tawfik(Georgia Institute of Technology), Erian	José Reinoso(Universitat Hannover), Antonio	10:06	Sree shankhachur Roy. Prasad Potluri, Constantinos Soutis
		Armanios(University of Texas at Arlington), Stefan	Blazquez(Universidad de Sevilla), Federico París(Universidad	10:10	SMALL LEAKAGE BIG PROBLEM - AUTOMATED LEAKAGE DETECTION OF VACUUM SETUPS IN CFRP
		Dancila(University of Texas at Arlington)	de Sevilla)	10.10	PRODUCTION
	This paper considers the dynamics of composite shells with	The current research provides an efficient method to design a	This research deals with the experimental and the numerical		Jens Boelke
	formulated in curvilinear coordinates to examine various	bistable panel.	compression load.	10:14	SECONDARY FORMING OF HYBRID REINFORCEMENTS METAL MATRIX COMPOSITE
	geometries.	*	*		Hyun ho Kim, Chung-gil Kang
	EVBEDIMENTAL STUDY OF ODLIGHTE IMDACTS ON	AUTHORITY OPTIMICATION FOR RECONANT	THE NETTING ANALVEIS AS A LIMIT CASE OF THE	10:18	POROSITY ELIMINATION RELATED FROM THE VOLATILES FROM THE POLYMERIZATION IN RTM PROCESSING
0:30	HELICOPTER BLADES – FORCE GAUGING BY	MORPHING CONTROL OF BI-STABLE WING-SHAPED	LAMINATED STRUCTURE THEORY		Cédric Pupin
	DIGITAL IMAGE CORRELATION	COMPOSITES		10.22	THE COMPRESSION RESIN TRANSFER MOULDING PROCESS FOR EFFICIENT COMPOSITE MANUFACTURE
	Jean-charles Passieux(Institut Clément Ader), Pablo Navarro(Institut	Andres Felipe Arrieta diaz(Swiss Federal Institute of Technology,	Georges Verchery(Pluralis)		
	Clément Ader), Julien Aubry(Institut Clément Ader), Steven Marguet(Institut Clément Ader), Jean-françois Ferrero(Institut Clément	Zurich), Onur Bilgen(Old Dominion University), Michael I Friswell(Swansea University), Paolo Ermanni(Swiss Federal Institute			Kunal Masania, Clemens Dransfeld, benjamin bachmann
	Ader), Jean-noel Périé(Institut Clément Ader)	of Technology, Zurich)		10:26	THREE-DIMENSIONAL ULTRASONIC CUTTING OF RTM PREFORMS – A PART OF A HIGH VOLUME PRODUCTION SYSTEM
	Oblique impacts on helicopter blades are studied. A new motion analysis technique is proposed for tracking the impactor. The	The position optimization of piezoelectric actuators for maximising the authority to trigger controlled snap-through	The netting analysis is consistently derived as a limit case of the laminate theory. For many configurations, close-form solutions		
	force values provided by this measuring technique are then	with a dynamic morphing technique on wing-shaped bi-stable	are obtained, useful for design and sensitivity analysis.		Andreas Bjornsson, Kerstin Jonansen, Dan Eric Alexandersson
	analysed.	composites is presented.		10:30	Kenichi Hasegawa Masachika Yamane Suzuki. Jun Takahashi, Isamu Ohsawa
				10:34	TIMESAVING QUALITY ASSURANCE FOR THE AUTOMATED PREFORMING PROCESS IN THE AUTOMOBILE
				34	SERIAL PRODUCTION OF CARBON COMPOSITES
					Daniel Brabandt, Gisela Lanza, Patrick Bingemann
				10:38	UV CURABLE COATING FOR FLAME-RETARDANT TEXTILE FINISHING
					NARIARA JITATUMRUKU, WATCRATINDOW Promsook SOLVENT-CAST DIRECT-WRITE MICROFARRICATION OF THERMORIASTIC RASED NANOCOMBOSITE
				10:42	STRUCTURES
					Shuang-zhuang Guo, Marie-claude Heuzey, Daniel Therriault
				10:46	THE EFFECT OF THERMAL RESISTANCE ON THE CURING PROCESS OF A COMPOSITE PART
					Zhongmin Xue, Ltd, Qizhong Huang, Mingfa Ren, Hu Zhaohui, Gao Hongcheng
0:50			BREAK		

	Room 515	Room 519a	Room 514	Room 524ab	Room 524c
10:50			BREAK		
	PHYSICAL PROPERTIES Chairs: Zhengwei Zhou, Guodong Fang	MULTIFUNCTIONAL COMPOSITES SYMPOSIUM 10 Chair: Ioannis Chasiotis	APPLICATIONS 2 Chairs: Isabelle Paris, Simon Joncas	FRACTURE AND DAMAGE 10 Chairs: Constantinos Soutis, Carl Quinn Rousseau	INTERLAMINAR REINFORCEMENTS I Chairs: Kunigal N. Shivakumar, Felix N. Nguyen
11:10	THERMO-MECHANICAL INVESTIGATION OF ELECTROFORMED NICKEL-CARBON FIBERS COMPOSITES	THERMAL-MECHANICAL BEHAVIOR OF ACTIVELY COOLED VASCULARIZED COMPOSITES	PROPERTIES OF PHENYLETHYNYL IMIDE COMPOSITES FABRICATED VIA VARTM	MODELLING OF FLEXURAL BEHAVIOUR OF FUNCTIONALLY GRADED COATINGS	DELAMINATION PERFORMANCE OF TUFTED CARBON/EPOXY COMPOSITES MADE BY AUTOMATED DRY FIBRE PLACEMENT
	Sabah S Abdulnoor(University of Technology)	Anthony M Coppola(University of Illinois at Urbana- Champaign), Nancy R Sottos(University of Illinois at Urbana- Champaign), Scott R White(University of Illinois at Urbana- Champaign)	Roberto J. Cano(NASA), Sayata Ghose(The Boeing Company)	Maria Kashtalyan(University of Aberdeen), Maryam Heidari(University of Aberdeen), Igor Guz(University of Aberdeen)	Diego Marcelo Lombetti(Cranfield University), Giuseppe Dell'anno(Cranfield University), Ivana Katherine Partridge(University of Bristol), Alex Skordos(Cranfield University)
	A slab of plain nickel is produced by electrochemical forming process, similarly a nickel-matrix is built around a predesigned formation of paralleled long carbon fibers.	In this study we examine the ability of active cooling through vascular channels embedded in a fiber-reinforced composite to preserve mechanical properties in a hot environment.	The NASA LaRC HT-VARTM process was successfully used to fabricate quasi-isotropic composite panels from three PETI resin systems, LARC™ PETI-330, LARC™ PETI-8 and LARC™ PETI-9.	This paper presents a 3-D elasticity analysis of stress and displacements fields in coated plates subjected to transverse loading with coating properties graded in thickness direction.	This paper focuses on the experimental determination of the mode 1 and mixed 1/11 mode delamination resistance of DCB specimens prepared by automated dry fibre placement and tuffed with aramid thread.
11:30	FIBER ORIENTATION ASSESSMENT IN CARBON	ACTIVELY COOLED BATTERY PACKAGING USING	FEASIBILITY STUDY ON A LARGE CHOPPER DISC	EXPERIMENTAL AND NUMERICAL INVESTIGATIONS	INTERLAMINAR REINFORCEMENT BY ALIGNED
-	FIBER REINFORCED COMPOSITES USING INFRARED THERMOGRAPHY	VASCULAR COMPOSITES	FOR A TOF-SPECTROMETER	ON FRICTION EFFECTS IN 4ENF FRACTURE TESTS	CARBON NANOTUBES IN CARBON FIBER REINFORCED POLYMER COMPOSITES
	Henrique Coelho Fernandes(Laval University), Xavier Maldague(Laval University)	Stephen John Pety(University of Illinois at Urbana-Champaign), Nancy R Sottos(University of Illinois at Urbana-Champaign), Scott R White(University of Illinois at Urbana-Champaign)	Valeria Antonelli(Technische Universitat Munchen), Wiebke Lohstroh(Technische Universitat Munchen), Horst Baier(Technische Universitat Munchen)	John Botsis(Ecole Polytechnique Federal de Lausanne)	Felix N Nguyen(Toray Composites (America)), Kenichi Yoshioka(Toray Industries Inc.), Al Haro(Toray Composites America Inc.), Noriyuki Hirano(Toray Industrise Inc.), Swezin Than tun(Toray Composites (America)), Raquel Ovalle robles(University of Texas at Dallas)
	In this work we apply Infrared Thermography to assess fiber	Microvascular composite panels are fabricated for the cooling of	The present paper describes the results of a parameter study	Support friction in Mode II fracture of carbon/epoxy is studied	Aligned CNTs parallel to the fiber's direction as an interlaminar
	orientation. More specifically a "laser spot" technique is used to assess fiber orientation on the surface of a carbon/PEEK plate	batteries. Cooling experiments using an infrared (IR) camera are compared to computational fluid dynamics (CFD)	necessary to design the most efficient TOF-Spectrometer to be accommodated in the new European Spallation Neutron Source	experimentally and numerically. Embedded sensors are employed to obtain stains and used to quantify friction effects	reinforcement of a carbon fiber reinforced polymer composite is discussed in terms of the tube's characteristics and alignment
	assess fiber orientation on the surface of a carbon/ r EER plate.	simulations.	accommodated in the new European Spanaton Neuron Source.	on fracture.	uscussed in terms of the tube s characteristics and anguinene.
11:50	TEXTURE SHARP TRANSITION MECHANISM OF PYROCARBON BASED ON MONTE CARLO	A MULTIFUNCTIONAL MICROPOROUS POLYMER NANOCOMPOSITE WITH GRAPHENE NANOPLATELETS	THE RESEARCH PROGRESS FOR THE STRUCTURAL AND FUNCTIONAL MATERIAL OF FOAMED METAL IN THE PREPARATION AND APPLICATION	AN IMAGE BASED APPROACH TO MODELLING PLASTIC BONDED EXPLOSIVES (PBX) ON THE MICRO SCALE	COMPATIBILITY ASSESSMENT BETWEEN INTERLEAVING NANOFIBERS AND COMPOSITE LAMINATES
	Qingbo Huang(Shanghai University), Ruicheng Bai(Shanghai University), Aijun Li(Shanghai University), Hong Li(Shanghai University), Musu Ren(Shanghai University), Jinliang Sun(Shanghai University)	Diandra Rollins(Michigan State University), Lawrence T Drzal(Michigan State University)	Keju Ji(Nanjing University of Aeronautics and Astronautics)	Hari Arora(Imperial College of Science), Maria Charalambides(Imperial College of Science), Edmund Tarleton(University of Oxford), David M Williamson(University of Cambridge), Claire L Leppard()	Kunigal N Shivakumar(North Carolina A&T State University), Sandi G Miller(NASA), Raghu Panduranga(North Carolina Agricultural and Technical State University), Matthew M Sharpe(North Carolina Agricultural and Technical State University)
	The paper presents a kinetic model for pyrolytic carbon (pyrocarbon) deposition and its texture formation. Numerical calculations are carried out by Monte Carlo.	A multifunctional nanofiller, in this case graphene, is embedded into the structure of a polymer foan to change its electrical and thermal properties while maintaining its mechanical performance.	The foamed metal is a porous structure with an interconnected 3- D metallic scaffold. It was applied as the foamed-metal reinforced rubbing material, heat transfer and conductive shielding material.	Finite element models have been made based on scanning electron microscope (SEM) images of a binary composite microstructure to predict fracture paths and global response under loading,	Test methods are presented to identify polymer nanofibers that bonds well with hase laminate resin to improve interlaminar fracture toughness with loss of in-plane properties.
12:10	NUMBERICAL AND EXPERIMENTAL ANALYSIS FOR MODE I FRACTURE OF TI/APC-2 HYBRID COMPOSITE LAMINATES	TWO-PHASE PORO-VASCULAR LAMINATES WITH STRUCTURE-PLUS-SURFACE ROUGHNESS CONTROL	DEVELOPMENT OF CARBON FIBRE REINFORCED EPOXY COMPOSITES WITH CONTROLLABLE STIFFNESS	MATERIAL CHARACTERIZATION WITH REPRESENTATIVE VOLUME SIMULATIONS OF WOVEN POLYMER MATRIX COMPOSITES	MECHANICAL PROPERTIES OF WOVEN FIBERGLASS COMPOSITE LAMINATE INTERLEAVENED WITH GLASS NANOFIBERS
	Lei Pan(Nanjing University of Aeronautics and Astronautics)	James P. Thomas, Marriner Merrill, Andrew T. Smith, David Kessler, Michael Baur, Siddiq Qidwai, Alberto Pique (Naval Research Laboratory), Christopher Kindle (Science Applications International, Inc.)	Henry Maples(Imperial College of Science), Charnwit Tridech(Imperial College of Science), Alexander Bismarck(Imperial College of Science), Paul Robinson(Imperial College of Science)	Shawn A English(Sandia National Labs), Timothy Briggs(Sandia National Labs)	Ajit D. Kelkar(North Carolina A&T State University), Ram Mohan(North Carolina A&T State University), Dattaji Shinde(North Carolina A&T State University), Evan Kimbro(North Carolina A&T State University)
	The influence of surface treatment of titanium alloys fracture behavior analysis of Ti/APC-2 was evaluated by the combination of a experimental method of DCB and the finite element method	Poro-vascular composites are laminates with liquid-filled internal channels connected to surface pores for roughness control. Fabrication results and multifunctional characterization are reported.	High performance carbon fibre reinforced epoxy composites with controllable stiffness have been manufactured and tested. The stiffness is controlled by altering the temperature of the composites.	A distribution of constitutive responses is obtained using material and geometric uncertainties with representative volume elements (RVE) of the woven polymer matrix composite meso-structure.	Paper focuses on the fabrication; characterization and behavior of fiberglass laminates interleaved with glass TEOS electrospun nanofibers and evaluates potential of such interlaminar reinforcements.
12:30		I	LUNCH		

	Room 522	Room 518ab	Room 520ad	Room 519b	Room 520c
10:50			BREAK		
	MICROMECHANICAL MODELING SYMPOSIUM I Chair: Igor Tsukrov	PROCESSING II Chairs:Alfred Loos, Paolo Ermanni	AUTOMATED COMPOSITES MANUFACTURING II Chairs: Ralf Schledjewski, Akira Kuraishi	FATIGUE OF COMPOSITES 6 Chairs: Karl Schulte, Giuliano Allegri	HEALTH MONITORING 2 Chairs: Peter Wilson, Ahmed Malsouhi
11:10	DESIGN OF THE THERMAL TRANSPORT IN FIBER REINFORSED COMPOSITES	INFLUENCE OF MATERIAL FLOW IN COMPRESSION MOLDING ON MECHANICAL PROPERTIES OF DISCONTINUOUS CF/PP	MODELLING THE EFFECT OF GAPS AND OVERLAPS IN AUTOMATED FIBRE PLACEMENT (AFP) MANUFACTURED LAMINATES	EFFECT OF FLEXIBLE INTERPHASE ON DYNAMIC CHARACTERISTICS OF CFRP	PROCESS OPTIMISATION FOR MILLING CARBON/EPOXY COMPOSITE MATERIAL USING RESPONSE SURFACE METHODOLOGY AND VIBRATION ANALYSIS
	Vinit Deshpande(Karlsruhe Insitiute of Technology), Romana Piat(Karlsruhe Institute of Technology), Yuriy Sinchuk(Karlsruhe Institute of Technology), Galyna Stasiak(Karlsruhe Insitiute of Technology), Puneet Mahajan(Indian Institute of Technology, Delhi)	Nozomi Mitsui(The University of Tokyo), Kazuro Kageyama(Tokyo University), Jun Takahashi(The University of Tokyo), Kiyoshi Uzawa(Kanawa Institute of Technology), Isamu Osawa(Tokyo University)	Xiangqian Li(University of Bristol), Stephen Richard Hallett(University of Bristol), Michael R Wisnom(University of Bristol)	Tatsuya Fukuda(Gifu University), Akio Ohtani(Gifu University), Asami Nakai(Gifu University)	Hicham Chibane(Ecole Nationale d'Ingenieurs du Val de Loire), Roger Serra[Ecole Nationale d'Ingenieurs du Val de Loire), Antoine Morandeau (Universite Francois Rabelais de Tours), René Leroy(Universite Francois Rabelais de Tours)
	The studies on optimal orientations of fiber in C/C composite on macro- and microlevels are provided. Microstructure characterization, FE- and micromechanical modeling are provided.	In this study, the mechanical expanding rate in compression molding was varied to investigate the influence of material flow during molding on flexural properties of molded materials.	The AFP process can introduce gaps and overlaps between tapes, which reduces strength. Finite element models were created to simulate the effect of defects from the manufacturing process.	Flexible interphase was applied to carbon fiber reinforced plastic. Fracture mechanism of flexible treated specimens was examined by observing progress of micro fractures under fatigue loading.	The objective of this study is to find the cutting conditions using design of experiments and vibration criterion in order to avoid the delamination defects in down milling process of CFRP material.
11.20	HOMOGENIZATION OF ELASTIC PROPERTIES OF	STUDY ON APPLICATION OF ABRASIVE WATER JET	IMPACT OF LAYUP RATE ON QUALITY OF FIBER	CUMULATIVE FATIGUE DAMAGE PREDICTION OF	CURE MONITORING OF AN AUTOCLAVE
11.30	SHORT FIBER REINFORCED COMPOSITES BASED ON MICRO COMPUTER TOMOGRAPHY DATA	CUTTING TO THICK CFRP PLATE	STEERING/CUT-RESTART IN AUTOMATED FIBER PLACEMENT PROCESS	COMPOSITE STRUCTURES	MANUFACTURED INDUSTRIAL PART: ADDED VALUE OF COMPLEMENTARY INSTRUMENTATION
	Viktor Müller, Barthel Brylka, Thomas Böhlke(Karlsruhe Institute of Technology), Felix Dillenberger, Robert Glöckner(Fraunhofer Institute for Structural Durability and System Reliability LBF), Stefan Kolling (Technische Hochschule Mittelhessen)	Hirohito Hira(Daido University)	Jihua Chen(National Research Council Canada), Teresa Chen-keat(), Mehdi Hojjati(Concordia University), Alexander J Vallee(), Marc- andre Octeau(Natural Resources Canada), Ali Yousefpour(National Research Council Canada)	Chris Cater(Michigan State University), Xinran Xiao(Michigan State University)	Francis Collombet(Institut Clément Ader), Geert Luyckx(Ghent University), Camille Sonnenfeld(Vrije Universiteit Brussel), Yves-henri Grunevald(), Yves Angel Davila(Institut (Ghenent Ader), Mauricio Torres(Instituto Politecnico Nacional), Xavier Jacob(), Kuo-ting
	A micromechanical approach to model short fiber reinforced composites is presented. The model uses microstructure data from micro of measurements. Numerical results are compared with experiments.	Application of abrasive water jet cutting to CFRP plates were examined to compare with fiber laser cutting. And then tilt effect on cut quality was studied.	In this study, both simulation and experiment were conducted to investigate impact of layup rate on quality of fiber steering and fiber cut-restart in automated fiber placement process.	This paper investigates the use of Miner's rule and a novel Degraded Strength Based Model for cumulative damage in a Progressive Fatigue Damage Model.	A multi-instrumentation set up is proposed for monitoring a composite structure during its curing phase to show the complementarity of different embedded devices
	MODELLING EDGE EFFECTS ON COMBRESSING	INELLENCE OF MILL CEOMETRY ON CLITTING	MODELLING CLIFTABE DEBOGITION DUBING	INDEDWATER ACCELERATED ACING OF	OTDUCTUDAL CLASS EIDDES FOD ODTICAL DAMAGE
11:50	MODELLING EDGE EFFECTS ON COMPRESSIVE STRENGTH OF FIBRE COMPOSITES	FORCE AND SURFACE MORPHOLOGY OF MULTIDIRECTIONAL CFRP	AUTOMATED FIBRE PLACEMENT	ELASTOMERIC COMPOSITE MATERIALS	CURE AND MOISTURE INGRESS SENSING IN ADVANCE REINFORCED POLYMER COMPOSITES
	Michael Sutcliffe(University of Cambridge)	Yan Chen(Nanjing University of Aeronautics and Astronautics), Yucan Fu(Nanjing University of Aeronautics and Astronautics), Honghua Su(Nanjing University of Aeronautics and Astronautics), Shengchao Han(Nanjing University of Aeronautics and Astronautics)	Fabrice Helenon(National Composites Centre), Dirk Lukaszewicz(BMW Group), Dmitry Ivanov(University of Bristol), Kevin Potter(University of Bristol)	Audrey Favre(Ecole Polytechnique de Montreal), Edith roland Fotsing(Ecole Polytechnique de Montreal), Edu Ruiz (Ecole Polytechnique), Martin Lévesque(Ecole Polytechnique de Montreal), Clémentine Fellah(Ecole Polytechnique de Montreal)	Peter Wilson(University of Sheffield), Simon Antony Hayes(University of Sheffield), Russell Hand(University of Sheffield)
	Finite element analysis is used to explore free edge and size effects for compressive failure of fibre composites containing idealised and random variations of fibre waviness.	Down milling processes of CFRP with varied mills are investigated. The objectives are to find relationships among the mill geometry, cutting force and surface morphology of the milled workpieces.	FE analyses are performed to model the behaviour of several tows lay down simultaneously. Final perperpet thickness and width are predicted. Models include lateral interactions between adjacent tows.	The main purpose of this study was to understand the influence of accelerated underwater ageing on the mechanical properties of three elastomeric composites.	Using structural glass fibres to optically sense damage using an intensity based system and, to sense cure and moisture ingress using fibre evanescent wave spectroscopy with the same fibre in a ARPC.
12:10	HOMOGENIZATION AND SENSITIVITY ANALYSIS FOR THERMOELASTIC OPTIMAL DESIGN OF METAL- CERAMIC COMPOSITES	ULTRASONIC WELDING OF THERMOPLASTIC COMPOSITE. MODELING THE HEATING PHENOMENA	DESIGN, DIMENSIONING AND AUTOMATED MANUFACTURING OF PROFILED COMPOSITE DRIVESHAFTS		PROCESS MONITORING OF FRP LAMINATES BY EMBEDDED FIBER OPTIC SENSORS
	Yuriy Sinchuk(Karlsruhe Institute of Technology), Romana Piat(Karlsruhe Institute of Technology)	Steven Le corre(Universite de Nantes), Arthur Levy(McGill University), Irene Fernandez villegas(Delft University of Technology)	Florian Lenz(Technische Universitat Dresden)		Tatsuro Kosaka(Kochi University of Technology), Akihiro Matsumoto(Kochi University of Technology), Takuya Kajikawa(Kochi University of Technology), Masayo Koike(Kochi University of Technology), Kazuhiro Kusukawa(Kochi University of Technology)
	This study presents a modeling and optimization of the composites with plastic metal and brittle ceramic phases. Optimization is provided for lamellae orientation.	Ultrasonic welding allows to locally dissipate heat at an assembly interface. This paper aims at modeling and simulating the key physical phenomena during the heating phase.	At the TU Dresden, a novel profiled driveshaft was developed along with a continous manufacturing process. Results of extensive numerical and experimental investigations will be presented.		Strain, degree of cure and existence of voids could be successfully monitored by our developed a process monitoring system during molding of FRP laminates.
12:30			LUNCH		

10:50	MPACT & DYNAMIC RESPONSES 2 Chair: Serge Abrate	INTERFACE 1	BREAK	
]	MPACT & DYNAMIC RESPONSES 2 Chair: Serge Abrate	INTERFACE 1		
		Chairs: Anthony R. Bunsell, Iosif Daniel Rosca	MODELLING OF PLATES & SHELLS 2 Chairs: Georges Verchery, Farid Taheri	JOINING - POSTER Chairs: Chun Li, Arthur Levy
11:10 OFFSET TESTS	FAILURE IN FILLED HOLE COMPRESSION	STUDY ON INTERFACE COMPATIBILITY OF CARBON FIBER/EPOXY RESIN COMPOSITE BY SINGLE FIBER FRAGMENTATION TEST	FINITE ELEMENT MODELING OF THE CRUSHING BEHAVIOR OF GRAPHITE/EPOXY MEMBERS	11:10 NOVEL INDUCTION HEATING TECHNIQUE FOR JOINING OF CARBON FIBRE COMPOSITES Chris M Worrall INPROVEMENT METHOD OF THE ADDRESIVE BONDING BETWEEN THE PEI AND CERP FOR THE
Bruno Ca	stanié(Institut Clément Ader)	Guo Congcong(Beihang University), Zhan Maosheng(Beihang University), Zhi Yang(Xian Aircraft Industry Corporation)	Deepak Siromani(Drexel University), Tein-min Tan(Drexel University), Jonathan Awerbuch(Drexel University)	11:14 ULTRACENTRIFUGE ROTOR Soon Ho Yoon
A failure i failure. In loads but	node may occur in compression tests : the off-set the litterature, this mode was attributed to bearing a different failure scenario was identified in this study.	The single fiber fragmentation test was performed to evaluate interfacial compatibility of carbon fiber/epoxy resin composite. Besides, surface characterization by SEM and XPS was undertaken.	This paper discusses the finite element modeling and simulations performed to capture the crushing behavior of graphite/epoxy members subjected to quasi-static axial compression.	11:18 STIMULUS RESPONSE POLYMER AND MULTIFUNCTIONAL COMPOSITES: CHALLENGES AND PROSPECTS Christophe Bois, Julie Lecomte, Erwann Le goff, Jean-christophe Wahl, Hervé Wargnier 11:22 ADHESION AND DEGRADATION OF WELL-DESIGNED TITANIUM-PEEK INTERFACES WITHIN TITANIUM- CF/PEEK LAMINATES
11:30 EDGE IN COMPOS	IPACT DAMAGE SCENARIO ON STIFFENED SITE STRUCTURE	INTERLAMINR FRACTURE TOUGHNESS OF NACRE: A HIGH PERFORMANCE BILOGICAL COMPOSITE	INFLUENCE OF IMPERFECTIONS ON AXIAL BUCKLING LOAD OF COMPOSITE CYLINDRICAL SHELLS	Karola Schulze 11:26 ADHESIVE BONDING LAP SHEAR STRENGTH IMPROVEMENT OF CFR(PEEK) LAMINATES BY SURFACE MORPHOLOGY MODIFICATIONS
Ostre Ber lEspace IS	ajamin(Institut Superieur de l'aeronautique et de SAE)	Ahmad Khayer dastjerdi(McGill University), Reza Rabiei(McGill University), Francois Barthelat(McGill University)	Jendi Itjieh Kepple, B. gangadhara Prusty, Garth Morgan Kendall Pearce, Donald Wainwright Kelly (University of New South Wales), Rodney Thomson, Richard Degenhardt (Deutsches Zentrum fuer Luft und Raumfahrt e.V. (DLR))	Réda el hak Ourahmoune, Michelle Salvia, Nadir Mesrati, Thomas Mathia 11:30 FRACTURE ANALYSIS OF NEEDLE PUNCHED NONWOVEN COMPOSITE WITH OPEN HOLE Zhiyuan Zhang, Gustav Martin Wizemann, Yuqiu Yang, Hiroyuki Hamada
It is very i to define paramete	mportant to study more precisely the edge impact and the damage scenario in order to identify the rs that affect the residual strength after impact.	In this work we have measured the interlaminar toughness of nacre, a high performance natural composite which can serve as model for bio-inspiration.	The sensitivity of the axial buckling load to initial imperfections of composite monocoque cylinders is measured for robust optimisation and application to launch vehicle structures.	11:34 THE EPOXY BEHAVIOR OF CFRP ACCORDING TO CLEARANCE AND PRESSURE IN COMPRESSION MOLDING FOR U-CHANNEL Hyun ho Kim, Minsik Lee, Chung-gil Kang
				11:38 FAILURE MECHANISM OF A SINGLE-LAP HYBRID JOINT OF COMPOSITE LAMINATE SCREWED AND
11:50 HIGH V GLASS/I MWCNT	ELOCITY IMPACT RESPONSE OF E- EPOXY COMPOSITES MODIFIED WITH NH2-	STRUCTURATION OF ADHESION PROMOTERS AT INTERFACES: A MOLECULAR LEVEL INVESTIGATION	SPACE VARIABLES SEPARATION AND PGD MODEL REDUCTION METHOD TO SOLVE ELASTICITY PROBLEMS ON LAMINATED PLATES AND SHELLS	BONDED TO A STEEL PLATE Songwei Wang, Xiaoquan Cheng, Zhonghai Li, Jiayi Qi, Qunfeng Cheng NIMERICAI STIDVON UI TRASONIC WEI DING JOINT FOR CEPTP
Muhamm Hosur(Tu Universit	ad M Rahman(Tuskegee University), Mahesh skegee University), Shaik Zainuddin(Tuskegee /), Shaik Jeelani(Tuskegee University)	Maurice Brogly(Universite de Haute-Alsace)	Brice Bognet, Adrien Leygue, Francisco Chinesta	Kazuya Suzuki, Isamu Ohsawa, Jun Takahashi, Kiyoshi Uzawa JOINT EFFICIENCY OF MULTI-POINT SPOT ULTRASONIC WELDING FOR CFRTP
Ballistic p by adding MWCNTs	erformance of E-glass/epoxy samples can be enhanced a very small percentage of amino-functionalized using small loading.	On the basis of surface advanced techniques, this work focuses on the mechanisms of structuration at interface of adhesion promoters used to reinforce the interface in composite	The idea here is to solve 3D problems on laminated plates and shells with a PGD based model reduction technique in order to be able to solve it with reasonable computational resources.	Tomoko Tomioka, Kiyoshi Uzawa, Hideaki Murayama, Isamu Ohsawa, Jun Takahashi 11:50 INTERFACE MICROSTRUCTURE OF A DOUBLE-POURED AL/AL-5CU BIMETALLIC COMPOSITE Guo Wu, Marina Galano, Keyna O'reilly
		materials.		11:54 JOINT STRENGTH OF CO-CURED COMPOSITE STRUCTURES USING Z-PINNING PATCH I. Choi, J. Jeong, S. Cheong
12:10 IMPROV BRIDGE	'ING BLAST RESISTANCE OF HIGHWAY S BY USING FRP	STUDY OF INTERPHASE IN EXFOLIATED GRAPHITE NANOPLATELETS/POLYAMDIE12 NANOCOMPOSITES	SEMI-ANALYTICAL POST-BUCKLING AND ULTIMATE STRENGTH ANALYSIS OF COMPOSITE PLATES	
Yuxin Pa Universit	n(Sichuan University), Moe m s Cheung(Sichuan))	Mehdi Karevan(Georgia Institute of Technology), Kyriaki Kalaitzidou(Georgia Institute of Technology)	Qiao jie Yang(University of Oslo), Brian Hayman(University of Oslo)	
The paper bridge sul material,	studied the structural responses of a RC highway ojected to blast loads. By incorporating the CFRP the vulnerable locations of bridges can be protected.	This study represents an integrated methodology to assess nano- reinforcement/polymer interfacial interactions and to determine the interphase properties in melt-mixed polymer nano-composites.	The ultimate strength analysis of simply supported, square plates subjected to uniaxial in-plane compressive load using large deflection theory and first order shear deformation theory.	
12:30		•	LUNCH	

	Room 515	Room 710	Room 514	Room 524ab	Room 524c
12:30			LUNCH		
	MECHANICAL BEHAVIOR Chairs: Samer Tawfik, John J. Wang	MULTIFUNCTIONAL COMPOSITES SYMPOSIUM 11 Chairs: Nancy R. Sottos, James P. Thomas	APPLICATIONS 3 Chairs: Sayata Ghose, Francis Martin	FRACTURE AND DAMAGE 11 Chairs: Constantinos Soutis, Carl Quinn Rousseau	INTERLAMINAR REINFORCEMENTS II Chair: Kunigal N. Shivakumar
13:30	INVESTIGATION ABOUT FRACTURE MODE AND STRENGTH IN CURVED SECTION OF CARBON FIBER REINFORCED POLYPROPYLENE	MULTIFUNCTIONAL COMPOSITE MATERIALS FOR BIO-INSPIRED SYSTEMS ALLOWING AUTONOMIC RESPONSE	MOVING TO COMPOSITE FUSELAGE DESIGN	AN EXPERIMENTAL AND NUMERICAL STUDY OF THE EFFECT OF SOME MANUFACTURING DEFECTS	EFFECT OF NAPS WITH ANISOTROPIC ORIENTATION BETWEEN LAYERS ON MECHANICAL PROPERTIES OF WOVEN COMPOSITES
	Yi Wan(The University of Tokyo), Takeshi Goto(The University of Tokyo), Tsuyoshi Matsuo(The University of Tokyo), Jun Takahashi(The University of Tokyo), Isamu Ohsawa(The University of Tokyo)	B. Les Lee (US Air Force Office of Scientific Research)	Francisco Kioshi Arakaki(EMBRAER S.A.)	Tonny Nyman(Saab AB), Alann Andre(), Malin Akermo(Royal Institute of Technology), Sören Nilsson(Swerea SICOMP), Monica Norrby(Royal Institute of Technology)	Jun Hirai(Tsudakoma Corporation), Akio Ohtani(Gifu University), Asami Nakai(Gifu University), Hiroyuki Hamada(Kyoto Institute of Technology)
	Tensile test and finite-element analysis of L-shaped CF/PP specimens had been conducted. The relationship between fracture modes, strength types and the curvature in curved section are evaluated.	The most revolutionary vision for developing a new generation of multifunctional structures appears to be autonomic systems that can sense, diagnose and	This paper outlines the conception of the composite stiffened panel designed to shear and bending loading under post backling behaviour.	An experimental and numerical study of effects of defects in a pin-loaded composite joint has been conducted. An excellent correlation between analyses and experiments were obtained.	Effects of anisotropic naps of carbon waven fabrics on basic mechanical properties and interlaminar properties of composite laminates were investigated.
13:50	ELASTIC MODULUS ESTIMATION OF CHOPPED CARBON FIBER TAPE REINFORCED THERMOPLASTICS USING THE MONTE CARLO SIMULATION	respond to external stimuli.	INNOVATIVE INTEGRAL COMPOSITE AIRCRAFT STRUCTURES	THE EFFECT OF RUBBER THICKNESS AND LOAD RATE ON THE INTERFACIAL FRACTURE EXERGY IN STEEL/RUBBER/COMPOSITE HYBRID STRUCTURES	FABRICATION OF SELF-AMELIORATING MICROPHASES BETWEEN COMPOSITE PLIES BY INKJET PRINTING
	Yu Sato(The University of Tokyo), Jun Takahashi(The University of Tokyo), Tsuyoshi Matsuo(The University of Tokyo), Isamu Ohsawa(The University of Tokyo), Kohei Kiriyama(), Satoshi Nagoh(Toyobo Co., Ltd.)		Kristian Zimmermann(EADS Innovation Works), Tamas Levente Havar(EADS Innovation Works)	Essi Sarlin(Tampere University of Technology), Jyrki Vuorinen(Tampere University of Technology), Minnamari Vippola(Tampere University of Technology), Toivo Lepistö(Tampere University of Technology)	Yi Zhang(University of Sheffield)
	IN this study, we evaluated the elastic modulus of CTT using Monte Carlo method by focusing on the random arrangement of the chopped UD tapes.		This paper focuses on innovative primary composite aircraft structures. Integral designs for composite flap load introduction ribs and landing gear fittings is shown.	According to this study, increasing load rate and decreasing rubber thickness increases the interfacial fracture energy between glass fibre reinforced epoxy composite and EPDM based rubber.	Inkjet printing technique was used to deposit self-ameliorating agents between composite piles with the aim of gaining self- repairing functional composite.
14:10	CONTROLLED IMPACT TESTING OF CARBON FIBRE COMPOSITES WITH AND WITHOUT CARBON NANOTUBES AND/OR SMA WIRES	ENERGY HARVESTING AND SHOCK MITIGATION IN COMPOSITE STRUCTURES	A NOVEL CONCEPT FOR CONFORMAL LOAD- BEARING ANTENNA STRUCTURES USING DISSIMILAR COMPOSITES	EXPERIMENTAL ANALYSIS OF DAMAGE IN FABRIC- REINFORCED COMPOSITES SUBJECTED TO LOW- VELOCITY IMPACTS	INTERLAMINAR CHARACTERISTICS OF CFRP WITH THERMOPLASTIC PARTICLES
	Katerina Sofocleous(University of Cyprus), Vassilis Drakonakis(University of Cyprus), Stephen L Ogin(University of Surrey), Haris Doumanidis(University of Cyprus)	Chris Lynch(University of California, Los Angeles)	Jasim Ahamed(Royal Melbourne Institute of Technology), Chun H Wang(RMIT University)	Vadim V. Silberschmidt(Loughborough University)	Takayuki Uno(Gifu University), Akio Ohtani(Gifu University), Asami Nakai(Gifu University), Teiji Ito(Daicel-Evonik Ltd.), Eiji Takenaka(Daicel-Evonik Ltd.), Mitsuteru Mutsuda(Daicel-Evonik Ltd.)
	Woven carbon fabric with and without CNTs and or SMA wires, have been impacted. Specimens with CNTs and SMA wires show the highest energy absorption compared to other kind of specimens.	Energy harvesting from impact is used to modify material for shock mitigation. The primary energy harvesting material is a F to AF phase transforming material, 95/5 PZT.	A comparative investigation of a number of alternative structural concepts to maximize the strength of Conformal Load- Bearing Antenna Structure was conducted.	The paper investigates the dynamic behaviour of woven fabric composites under low-velocity impacts generated by pendulum- type hammers.X-ray Micro CT is used to analyse the damage in the materials.	In this study, effects of the size, shape, and amount of thermoplastic particles on interlaminar characteristics of woven laminated composites were investigated by using DCB and ENF tests.
14:30	EFFECT OF FIBER LENGTH, TYPE, AND VOLUME FRACTION ON FLEXURAL STRENGTH OF DISCONTINUOUS CARBON/CARBON COMPOSITES	AUTONOMIC BIOMOLECULAR MATERIAL SYSTEMS AS MULTIFUNCTIONAL COMPOSITES	EFFECT OF MICROSPHERE CONTENT ON FIRE PERFORMANCE AND THERMOMECHANICAL PROPERTIES PHENOLIC RESOLE SYNTACTIC FOAM COMPOSITES	TENSILE PROPERTIES OF CARBON AND GLASS T- JOINTS AS A STRUCTURAL ELEMENT OF WIND TURBINE BLADE	PLASMA TREATED CARBON NANOTUBE COATINGS ON THE FRACTURE TOUGHNESS OF GLASS PREPREGS.
	Daniel Heim, Alexander Matschinski, Thomas Kandler, Swen Zaremba, Klaus Drechsler (Technische Universitat Munchen), Christian Klotz (SGL CARBON GmbH)	Donald Joseph Leo	Mounia Bouslah(Ecole Centrale de Lyon), Michelle Salvia(Ecole Centrale de Lyon), Isabelle Descheres(Institut Textile et Chimique de Lyon), Bruno Berthel(Ecole Centrale de Lyon), Stephane Benayoun(Ecole Centrale de Lyon)	Amirhossein Hajdaei(University of Manchester Institute of Science and Technology), Paul Jonathan Hogg(Royal Holloway and Bedford New College), Constantinos Soutis(University of Manchester)	John Williams(University of Bristol), Sameer Rahatekar(University of Bristol)
	The effect of fiber length, fiber type, and fiber volume fraction on flexural strength was studied. A maximum flexural strength of 94 \pm 23 MPa was achieved for a short fiber C/C in graphitized state.	Our group has recently initiated a program to understand how we can utilize biomolecules to create a new class of autonomic biomolecular material that exhibits multifunctional behavior.	This paper presents the material characterization details of different systems of phenolic syntactic foams, all fabricated with glass microspheres as reinforcement but differing in their quantity.	Different toughening methods used to improve the interlaminar fracture properties of T-joint as a representative of wind turbine blade's Spar.	Plasma treated earbon nanotubes have been coated on to a pre- preg system at different concentrations to improve the mode 1 & 2 fracture toughness.
14:50			BREAK		

	Room 522	Room 518ab	Room 520ad	Room 519b	Room 520c
12:30			LUNCH		
	MICROMECHANICAL MODELING SYMPOSIUM II Chair: Alexander L. Kalamkarov, Borys Drach	PROCESSING III Chairs: Abbas Milani, Christophe Mobuchon	AUTOMATED COMPOSITES MANUFACTURING III Chairs: Nobuya Kamamura, Ralf Schledjewski	COMPOSITE STRUCTURES 1 Chairs: Antonio Ferreira, Farid Taheri	DETECTION & DAMAGE 1 Chairs: Richard Butler, John Botsis
13:30	HOMOGENIZATION MODELS FOR POLYMER-CLAY NANOCOMPOSITES: ONE AND TWO-STEP APPRAOCHES	UNDERSTANDING THE LAMINATION PROCESS TO IMPROVE COMPOSITE MANUFACTURING	STUDY ON PRESSURE CONTROL OF AUTOMATED FIBER PLACEMENT PROCESS	PROGRESSIVE FAILURE ANALYSIS OF COMPOSITE LAMINATES INCLUDING STRAIN RATE EFFECT	DIGITAL IMAGE CORRELATION APPLIED TO THERMAL EXPANSION OF COMPOSITES
	Maryam Pahlavanpour(Ecole Polytechnique), Pascal Hubert(McGill University), Martin Lévesque(Ecole Polytechnique de Montreal)	Michael Philip Elkington(University of Bristol), Carwyn Ward(University of Bristol), Anna Chatzimichali(University of Bristol), Leo Dominic Bloom(University of Bristol), Kevin Potter(University of Bristol)	Junfei Li(Nanjing University of Aeronauties and Astronauties), Chao Song(Nanjing University of Aeronauties and Astronauties), Xianfeng Wang(Nanjing University of Aeronauties and Astronauties), Jun Xiao(Nanjing University of Aeronauties and Astronauties)	Jingfen Chen(University of New South Wales), Evgeny V Morozov(University of New South Wales), Krishnakumar Shankar(Australian Defence Force Academy)	Camille Flament(Ecole Centrale de Lyon), Michelle Salvia(Ecole Centrale de Lyon), Bruno Berthel(Ecole Centrale de Lyon), Gerard Crosland()
	To find the best analytical model to predict the mechanical properties of polymer-clap anacomposites, the performance of different analytical models were compared against numerical simulations.	The hand layup manufacturing process is analysed in detail to understand exactly how prepreg sheets are manipulated by laminators during layup.	Discussed is Automated Fiber Placement (AFP) pressure control problem: a) Roller deformation; b) Relationship between average pressure and the force; c) Pressure maintenance problem and its solutions.	An elastoplastic damage model including strain rate effect is proposed for progressive failure analysis of composite laminates. Strain-driven implicit integration algorithm for the model is derived.	Digital image correlation is an optic experimental technique to measure displacements and strains. It provides full-field data. Here, it is used to analyze local thermal behaviour of composites.
13:50	SIMULATION OF FABRIC DEFORMATION UNDER MOLDING PROCESS	ON PREPREG PROPERTIES AND MANUFACTURABILITY	ROBOTIC DRY FIBRE PLACEMENT OF 3D PREFORMS	MODELING OF MULTIPLE DELAMINATIONS IN SHELLS USING XFEM	IOSIPESCU TEST TO CHARACTERIZE MODE II DELAMINATION RESISTANCE OF FIBRE- REINFORCED POLYMERS
	Lejian Huang(Kansas State University), Youqi Wang(Kansas State University), Yuyang Miao(Kansas State University), Chian-fong Yen(), Harun Bayraktar(Albany Engineered Composites), Jon Goering(Albany Engineered Composites)	Leo Dominic Bloom(University of Bristol), Carwyn Ward(University of Bristol), Anna Chatzimichali(University of Bristol), Kevin Potter(University of Bristol), Michael Philip Elkington(University of Bristol)	Alvaro Silva-caballero(University of Manchester), Prasad Potluri(University of Manchester), Dhavalsinh Jetavat(University of Manchester), William Richard Kennon(University of Manchester)	Jim Brouzoulis(Chalmers University of Technology), Martin Fagerström(Chalmers University of Technology)	Ben Jar(University of Alberta), Scott Mckinney(University of Alberta)
	The fabric molding processes are simulated. A numerical procedure to determine the realistic fiber-level deformed 3-D fabric micro-geometry is developed.	This work examines the role of material selection on the hand layup process. It attempts to identify the key material properties contributing to the ease/difficulty of manufacturing complex parts.	Development of a fabrication process to manufacture near net shape 3D reinforcements from dry fibres with variable thickness using ply-drops and variable fibre orientation between two adjacent layers.	A computationally efficient shell element which can account for multiple demaintainons is presented. The shell kinematics is enriched based on XFEM and the element is validated against tests.	This paper presents a study that uses losipescu loading to determine interlaminar fracture toughness of fibre-reinforced polymers in shear mode.
14:10	A VIRTUAL TEST-BED FOR THE PREDICTION OF HOLISTIC ELASTIC PROPERTIES OF UNIDIRECTIONAL COMPOSITES	CO2-LASER-ASSISTED PRODUCTION OF HYBRID FIBER-REINFORCED THERMOPLASTIC COMPOSITES	THERMOPLASTIC COMPOSITES: IN-SITU CONSOLIDATION OR IN-SITU WELDING?	MECHANICAL PROPERTIES OF COMPOSITE SANDWICH STRUCTURES WITH CORE OR FACE SHEET MODIFICATIONS	IDENTIFICATION OF FAILURE MECHANISMS IN THERMOPLASTIC COMPOSITES BY ACOUSTIC EMISSION MEASUREMENTS
	Ambrose Ighofovwe Akpoyomare(University of Greenwich), Michael Ihemelandu Okereke(University of Greenwich)	Christian Brecher(Fraunhofer Institute for Production Technology), Michael Emonts(Fraunhofer Institute for Production Technology), Joffrey Stimpfl(Fraunhofer Institute for Brechtving Technology)	Dhiren K. Modi(University of Limerick), Anthony John Comer(University of Limerick), Michael Mccarthy(University of Limerick)	Edith roland Fotsing(Ecole Polytechnique de Montreal), Matthieu Sola(Ecole Polytechnique de Montreal), Edu Ruiz(Ecole Polytechnique), Annie Ross(Ecole Polytechnique de Montreal)	Markus Günter ronny Sause(University of Augsburg), Joachim Scharringhausen(), Siegfried Horn(Universitat Augsburg)
	A virtual testing scheme suitable for performing high-fidelity computational experiments on composites is proposed. It is a micromechanical modelling approach implemented via Finite Element Analysis.	Franhofer IPT is currently developing and investigating CO2- laser-assisted tape winding of combined glass and carbon fiber- reinforced PP and PPS using for example thermoplastic liners.	This review paper highlights the effect of heat source on ATP process physics. This understanding will allow one to select the most suitable process or to suitably modify the process and materials.	Noticeable impact is observed if the amount of core discontinuities is significant or if the modified area of the face sheet is located directly under the loading force.	The present study uses acoustic emission measurements on thermoplastic composites to demonstrate a validated method able to identify particular failure mechanisms by pattern recognition techniques.
14:30	NUMERICAL SIMULATION OF DYNAMIC YARN PULL- OUT PROCESS	THE IMPACT OF PROCESS PARAMETERS ON THE RESIDUAL STRESSES AND DISTORTIONS IN PULTRUSION	IMPROVING ACCURACY IN ROBOTIZED FIBER PLACEMENT		
	Habiburrahman Ahmadi(Kansas State University), Youqi Wang(Kansas State University), Yuyang Miao(Kansas State University), Xiaojang Jack Xin(Kansas State University), Chian fong Yen(US Army Research Laboratory)	Ismet Baran(Technical University of Denmark), Jesper Henri Hattel(Technical University of Denmark), Cem C Tutum(Technical University of Denmark)	Maylis Uhart(Ecole Supirieure des Technologies Industrielles Avances), Olivier Patrouix(Ecole Superieure des Technologies Industrielles Avances), Yannick Aoustin(Universite de Nantes), Joseph Canou(Ecole Superieure des Technologies Industrielles Avancees)		
	This paper presents a numerical study of dynamic yarn pullout behavior of Kevlar KM2 fabric in a fiber-level yarn structure.	In the present work, the effects of the heater configuration and pulling speed on the process induced residual stresses and distortions of a pulltruded glass/epoxy flat plate have been investigated.	This paper presents the use of force/torque hybrid control to improve the accuracy of the robotic fiber placement cell developed by Coriolis Composites within the industrial project IMPALA.		
14:50			BREAK		

	Room 525	Room 520f	Room 520be		Room 516ab
12:30			LUNCH		
	IMPACT & DYNAMIC RESPONSES 3 Chairs: Francis Collombet, Michael Sutcliffe	INTERFACE 2 Chairs: Anthony R. Bunsell, Iosif Daniel Rosca	COMPOSITES IN TURBINES, PIPES & VESSELS 1 Chairs: Pierre Mertiny, Simon Joncas		HEALTH MONITORING, MULTIFUNCTIONAL AND NDE - POSTER Chair: Ahmed Maslouhi
13:30	BALLISTIC IMPACT OF THERMOPLASTIC COMPOSITES REINFORCED WITH CARBON FIBERS	FIBER-MATRIX INTERFACE REINFORCEMENT USING ATOMIC LAYER DEPOSITION	STRUCTURAL DESIGN AND VALIDATION OF A 10 KW WIND TURBINE BLADE	13:30	IMPROVING ROBOTIZED NON DESTRUCTIVE TESTING FOR LARGE PARTS WITH LOCAL SURFACE APPROXIMATION AND FORCE CONTROL SCHEME
13:50	Hideaki Kasano(Takushoku University), Mohd azwan shahady Adzmi(Takushoku University) The paper presents the experimental and numerical study of ballistic impact response of continuous and discontinuous carbon fiber reinforced polycarbonate composites. CRITERIA FOR SKIN RUPTURE AND CORE SHEAR CRACKING DURING IMPACT ON SANDWICH PANELS Robin Olsson(Swerea SICOMP), Tim Berend Block(Faserinstitut Bremen e.V.)	Sari Katz(Soreq NRC), Yacov Carmiel(Bar-Ilan University), Irina Gouzman(Soreq NRC), Chaim Sukenik(), Daniel wagner(), Eitan Grossman(Soreq NRC) Atomic layer deposition (ALD) was investigated as a possible way to enhance the chemical bonding between the UHMWPE fibers and epoxy matrix without undermining the fiber tensile strength. DURABILITY AND INTERPHASES IN ADHESIVELY BONDED EPOXY-POLYESTER INTERFACES Mikko Samuli Kanerva(Aalto University), Essi Sarlin(Tampere University of Technology), Kosti Rämö(Tampere University of Technology) (Uli Saarel(aktu University)	Louis-charles Forcier(École de technologie supérieure - Université du Québec), Jonathon Summer(Dawson Collego), Tommy Gagnon(École de technologie supérieure - Université du Québec), Jean-François Charron(), Simon Jonasz École de technologie supérieure - Université du Québec) Structural design and validation of a vind turbine blade was made. The optimization capabilities of a finite element software was used and validation tests have shown good aggreement with the models. CARBON FIBRE REINFORCED PVDF PIPE Siti rosminah. Shamsuddin(Imperial College of Science), John Hodgkinson(Imperial College of Science), Lief Erik Asp(Swerea SICOMP), Ruma: Langstrom(Swerea SICOMP), Alexander	13:34 13:38 13:42 13:46 13:50	Olivier Patrouix, Sébastien Bottecchia, Joseph Canou NON-DESTRUCTIVE INSPECTION OF CFRPS USING INDUCTION HEATING THERMOGRAPHY Yuuki Shiya, Masashi Ishikawa, Yasuo Kogo, Hiroshi Hatta, Yoshio Habuka INSPECTION EFFECTIVENESS OF ULTRASONIC TEST FOR SEVERAL DEGRADED FRP TANKS IN RBI Masahiro Kusano, Tetsuya Sakai, Saiko Aoki, Masatoshi Kubouchi COMPARISON OF THREE NDT TECHNIQUES FOR THE INSPECTION OF AERONAUTIC COMPOSITE STRUCTURES Robin Dube, Laurent Scheed, Jacques Lewandowski, Laura Mouret, Marc P. Georges FULL FIELD STRAIN CHARACTERISTICS OF COMPOSITE LAMINATE WITH IMPACT DAMAGE UNDER IN- PLANE LOAD Yu Zhefeng, Ba Taxi, Hai Wang REDUCTION OF PHASE NOISE TO ENHANCE DETECTABLE DEPTH OF DEFECTS IN CFRPS USING PULSE PHASE THERMOGRAPHY
14:10	Criteria for skin rupture and core shear cracking in sandwich panel impact are derived and compared with tests on panels with various thicknesses of carbon/epoxy NCF skins and Rohaedl foam cores. MULTILAYER BALLISTIC SYSTEMS BASED ON DRY FABRICS	In this study, the durability of composite/composite joints is investigated. We concentrate on bond interfaces and interphases in multi-polymer systems with considerations on surface pre- treatments. INFLUENCE OF POWDER COATING PRE-CURING TIME ON INTERFACE COATING/EPOXY MATRIX COMPOSITE	Bismark(Imperial College of Science) Carbon fibre reinforced PVDP was manufactured using a laboratory composite line. The composite tapes were then used to fabricate reinforced thermoplastic pipes and characterised. SIMULATIVE DESIGN OF OVERBRAIDED PRESSURE VESSEL FOR HYDROGEN STORAGE	13:54 13:58 14:02	Masabi Ishikawa, Hiroshi Hatta, Yoshio Habuka, Shin Utsunomiya INFLUENCE OF STRESS FIELD AT OVERLAP EDGE OF CFRP SINGLE-LAP JOINT ON FIBER OPTIC DISTRIBUTED SENSING USING EMBEDDED FBG Daichi Wada, Ning Xiaoguang, Hideaki Murayama PREPARATION AND CHARACTERIZATION OF OPTICAL FIBERS EMBEDDED SMART GEOCOMPOSITE Seung woo Han, Yeong og Choi TOWARDS STRAIN-BASED STRUCTURAL HEALTH MONITORING OF A COMPOSITE AIRFOIL UNDER
	Francisca Martinez hergueta(IMDEA Materials), Carlos Daniel González(IMDEA Materials), Javier Llorca(IMDEA Materials), Tamara Blanco varela(), Jose J Martínez() Ballistic performance of barriers based on hybrid combinations of felts and dry woven fabrics and comparison with conventional ballistic protection systems.	Aurore Lafabrier(Universite de Toulon et du Var), Ahmad Fahs(Universite de Toulon et du Var), Emmanuel Aragon(Universite de Toulon et du Var), Jean-francois Chailan(Universite de Toulon et du Var) The objective is to study the interface between powder coatings and composite; to understand the adhesion mechanisms and the effect of curing time on interface characteristics has been studed	Michael Lengersdorf(Rheinisch Westfalische Technische Hochschule Aachen), Thomas Gries(Rheinisch Westfalische Technische Hochschule Aachen), Jörg Bernhard Multhoff(ISATEC GmbH), Markus Linke(Fachhochschule Hamburg) Hydrogen is considered to be an alternative fuel for future automotive generations. This paper will examine the braiding process as alternative to filament winding for composite pressure vessels.	14:06	UNCERTAINTY Hessamodin Teimouri, Abbas Milani, Rudolf Seethaler, Ali Abedian, Amir Heidarzadeh, Behnam Teimouri IMPACT OF MWCNT ON ELECTRICAL CONDUCTIVITY OF CARBON FIBER MULTISCALE COMPOSITES Maxime Arguin, Daniel Therriault, Frederic Sirois
14:30	HYPERVELOCITY IMPACT OF SPACE DEBRIS ON MULTIPLE COMPOSITE BUMPERS: EXPERIMENTS & SIMULATIONS USING LS-DYNA Abrar-ul-haq khan Baluch(Korea Advanced Institute of Science & Technology), Yurim Park(Korea Advanced Institute of Science & Technology), Yurim Dark(Korea Advanced Institute of Science & Technology), Tunim Dark(Korea Advanced Institute of Science & Technology), Tunim Dark(Korea Advanced Institute of Science &	PRE-TREATMENT OF CFRP FOR ADHESIVE BONDING USING LOW-PRESSURE BLASTING Stefan Kreling(Technische Universitat Carolo-Wilhelmina Braunschweig), Fabian Fischer(Technische Universitat Carolo- Wilhelmina Braunschweig), Klaus Dilger(Technische Universitat Carolo-Wilhelmina Braunschweig) Low-pressure blasting as a technology to pre-treat CFRP for	A NOVEL INJECTION PROCESS FOR LONG FIBER COMPOSITES USING ROTATION Andreas Altmann(Technische Universitat Munchen), Swen Zaremba(Technische Universitat Munchen), Roland Hinterhoelz(Technische Universitat Munchen), Klaus Drechsler(Technische Universitat Munchen) A novel process to manufacture composite structures via		
14:50	configurations for the spacecraft structural application. LSDYNA SPH-module used to validate	adhesive bonding is shown. Results of mechanical and analytical experiments performed on aerospace and automotive materials are presented.	rotational forces will be shown. In contrast to familiar techniques composite parts can be produced with non- symmetrical rotations.		
14:50			DREAR		

	Room 515	Room 519a	Room 514	Room 524ab	Room 524c
14:50			BREAK		
	NANOCOMPOSITES I Chairs: A. John Hart, Yadienka Martinez Rubi	MULTIFUNCTIONAL COMPOSITES SYMPOSIUM 12 Chairs: B. Les Lee, Don Leo	APPLICATIONS 4 Chairs: Sayata Ghose, Francis Martin	FRACTURE AND DAMAGE 12 Chairs: Gabriel Laplante, Shuguang Li	PREFORMS 1 Chair: Jeff Wood
15:10	ENHANCED MECHANICAL AND ELECTRICAL PROPERTIES OF IN-SITU CROSS-LINKED BUCKYPAPER		OVERVIEW AND DYNAMISM OF THE WORLDWIDE COMPOSITES MARKET	COMPRESSIVE STRENGTH AND DAMAGE MECHANISMS IN STITCHED CARBON/EPOXY COMPOSITES	PREDICTION METHOD OF INTERNAL STRUCTURE FOR DESIGNING BRAIDED -COMPOSITES WITH THERMOPLASTIC RESIN-
	Jianwei Zhang(National University of Defense Technology), Dazhi Jiang(National University of Defense Technology), Hua- xin Peng(University of Bristol)	MULTIFUNCTIONAL COMPOSITES	Daniel Ageda	Arief Yudhanto(Tokyo Metropolitan University)	Takeshi Saito(Kyoto Institute of Technology), Ryo Morinaga(Kyoto Institute of Technology), Masaru Imamura(Kyoto Institute of Technology), Asami Nakai(Gifu University), Akio Ohtani(Gifu University)
	An in-situ cross-linking method was developed to cross-link carbon nanotubes in the buckypaper, resulting in the highly improved tensile strength and electrical conductivity of the buckypaper.	SYMPOSIUM 12 OPEN DISCUSSION	Emerging opportunities from fast growing markets, dynamics of different market segments, trends and innovations, Key applications sectors, From academic research to industrialization	Effect of important stitching parameters (stitch density, stitch thread thickness) on compressive strength and damage mechanisms of Vectran-stitched carbon/epoxy is experimentally assessed.	The purpose of this study is to predict the relationship between dimensional and internal structural parameters for braided fabric reinforced thermoplastic composite.
15:30	MECHANISMS OF STRAIN INDUCED ALIGNMENT OF CARBON NANOTUBES (CNT): PROCESS SCALE-UP AND QUASI-CONTINUOUS HIGHLY ALIGNED CNT MATERIAL		THERMAL STABILITY OF CFRP MIRRORS FOR SPACE TELESCOPES UNDER THERMAL CYCLE TEST	FRAGMENTATION ANALYSIS OF GLASS FIBRES RECOVERED FROM HYDROLYSIS PROCESSES	PREDICTION METHOD OF INTERNAL STRUCTURE FOR DESIGNING BRAIDED COMPOSITES WITH THERMOSET RESIN
	Richard Liang(Florida State University)		Tomohiro Kamiya(Japan Aerospace Exploration Agency), Shin Utsunomiya(Japan Aerospace Exploration Agency), Ryuzo Shimizu(Japan Aerospace Exploration Agency)	Yat-tarng Shyng(University of Exeter), Oana Ghita(University of Exeter)	Masaru Imamura(Kyoto Institute of Technology), Ryo Morinaga(Kyoto Institute of Technology), Akio Ohtani(Gifu University), Asami Nakai(Gifu University)
	This reseach is to study alignment mechanisms and scale-up process development of CNT networks of large aspect ratio MWNTs for composite applications		To demonstrate the validity of CFRP mirrors, the surface accuracy at the each phase of the fabrication process and change of surface preciseness under thermal cycle was studied.	Investigation on the interfacial properties of glass fibres embedded inside epoxy matrix. Single fibre model composites were prepared for fragmentation tests and micromechanics analysis.	This study aims to clarify the interrelationship among structural parameters of braided composites and establish a prediction method of internal structure for designing braided composites.
15:50	EFFECT OF IRON-DEPOSITED REDUCED GRAPHENE OXIDES ON THE NEAR-FIELD ELECTROMAGNETIC ABSORBING PROPERTY OF COMPOSITE FILMS		BONDING OF CFRP PRIMARY AEROSPACE STRUCTURES: OVERVIEW ON THE TECHNOLOGY STATUS IN THE CONTEXT OF THE CERTIFICATION BOUNDARY CONDITIONS ADRESSING NEEDS FOR DEVELOPMENT	DAMAGE CHARACTERIZATION OF A THIN PLATE MADE OF ABS UNDER UNIAXIAL SOLICITATION	MECHANICAL PROPERTIES OF 3D WOVEN COMPOSITES WITH LARGE REPEAT UNIT CELLS
	Jin woo Yi(Korea Institute of Materials Science)		Thomas Kruse(Airbus Operations GmbH - Germany)	Hicham Farid, fouad erchiqui, fouad slaoui hasnaoui (University of Quebec Abitibi-Temiscamingue), hassan ezzaidi(University of Quebec at Chicoutimi), mohamed elghorba, hkalid elhad (Universite Hassan II - Ain Chock)	Edward Archer , Alistair Mcilhagger
	Effect of the Fe-deposited reduced graphene oxide on the near- field electromagnetic wave absorbing property of composite thin films was studied.		Bonding technology for Aerospace application is today limited by the certification regulations. An overview on actual development and strategies for a certification is given.	characterization of a notched ABS flat plate under uniaxial stress. Unified damage theory and the stress concentration criterion are considered to quantify the damage in notched structures.	This paper presents in-plane shear, open-hole tension and mode 1 fracture toughness data for 3D woven angle interlock carbon fibre composites
16:10	SWCNT FUNCTIONALIZATION FOR OPTIMIZED ELECTRICAL CONDUCTIVUTY OF EPOXY MATRICES		FLOW BEHAVIOR OF ALUMNIUM-BORON CARBIDE COMPOSITE BY DIFFERENTIAL STRAIN RATE COMPRESSION TEST	EXPERIMENTAL AND NUMERICAL STUDIES ON DAMAGE BEHAVIOR OF NYLON 6/CLAY NANOCOMPOSITES	
	Yadienka Martinez rubi, Christopher Kingston, Benoit Simard(NRC), Jose Miguel Gonzalez-dominguez, Alejandro Anson-casaos, Maria Teresa Martinez (Consejo Superior de Investigaciones Cienta-ficas (CSIC))		Srinu Gangolu(Indian Institute of Technology, Bombay), A Gourav Rao(Indian Institute of Technology, Bombay), N Prabhu(Indian Institute of Technology, Bombay), Y P Deshmukh(DRDO), B P Kashyap(Indian Institute of Technology, Bombay)	Shaoning Song, Yu Chen, Zhoucheng Su, Chenggen Quan, Vincent Bo Tan (National University of Singapore)	
	SWCNTs were functionalized for integration into an epoxy resin. The effect of the functionalization reaction and the degree of functionalization on the composites electrical conductivity is evaluated		The present work is to study the mechanical properties of hot rolled Al and A1-5% B4C composite and to examine the microstructural evolution towards exploring the structure–flow property correlation.	Experiment has been carried out to obtain the damage parameters for nylon 6. A 29 NVE model for nylon 6/day nanccomposites was introduced to study its constitutive properties and damage mechanisms.	
16:30			GENERAL ASSEMBLY		
18:30			End		

	Room 522	Room 518ab	Room 520ad	Room 519b	Room 520c
14:50			BREAK		
	MICROMECHANICAL MODELING SYMPOSIUM III Chair: Endel Larve, Romana Piat	PROCESSING IV Chairs: Abbas Milani, Casey James Keulen	AUTOMATED COMPOSITES MANUFACTURING IV Chairs: Nobuya Kamamura, Ralf Schledjewski	COMPOSITE STRUCTURES 2 Chairs: Antonio Ferreira, Farid Taheri	DETECTION & DAMAGE 2 Chairs: Richard Butler, John Botsis
15:10	MULTI-SCALE MODELING OF THE VISCOELASTIC PROPERTIES OF NON-WOVEN, THERMOPLASTIC COMPOSITES	INFLUENCE OF CUTTING PARAMETERS AND WEAR IN DRILLING OF 3D WOVEN CARBON/EPOXY COMPOSITES	COMPARATIVE CHARACTERIZATION OF THE TC-250 OUT- OF-AUTOCLAVE MATERIAL MADE BY HAND LAY-UP AND AUTOMATED FIBER PLACEMENT PROCESSES	STRESS ANALYSIS OF A FILAMENT WOUND COMPOSITE FLYWHEEL DISK	MICROMECHANISTIC ANALYSIS OF TOUGHENED CARBON FIBRE COMPOSITE LAMINATE FAILURE BY COMPUTED TOMOGRAPHY
	Sascha Fliegener, Michael Luke(Fraunhofer Institute for Mechanics or Materials IWM), Diego Elmer, Thomas Seifert (Fachhochschule Offenburg, Hochschule fur Technik und Wirtschaft)	Nicolas Cadorin(Institut Clément Ader), Redouane Zitoune(Institut Clément Ader), Francis Collombet(Institut Clément Ader), Bruno Castanié(Institut Clément Ader), Mathias Seve(Sneema)	Kulbir Singh Madhok(Concordia University), Ali Naghashpour(Concordia University), Suong Hoa(Concordia University)	Md. Sayem Uddin(University of New South Wales), Evgeny V Morozov(University of New South Wales), Krishnakumar Shankar(Australian Defence Force Academy)	Gregor Borstnar, Daniel J Bull, Mark N Mavrogordato, Ian Sinclair, Simon M Spearing (University of Southampton)
	The viscoelastic properties of the thermoplastic matrix are implemented into a microstructural simulation of the composite and the results are compared to those of experimental creep tests.	This paper discusses the relation between machining damages induced by various machining parameters and various cutting tools as well as tool wear when drilling an interlock composite 3D woven.	This paper is aimed at characterizing the OOA prepreg material by comparing the properties of laminates made by Hand Lay-up and AFP processes with Autoclave and OOA curing cycles.	The finite element modelling and stress analysis of the filament wound composite flywheel disk with distinctive mosaic patterns generated in the filament winding process is presented in this work.	Low velocity impact damage and Mode I and II in situ computed tomography experiments captured the failure micromechanisms in particle toughened carbon fibre composites.
15:30	STREAMLINED COMPOSITE MODELING WORKFLOWS WITH MULTI-OBJECTIVE OPTIMISATION	NANOSTRUCTURE GRADIENTS IN INJECTION- MOLDED PP/MMT COMPOSITES STUDIED BY MICROBEAM SAXS	HANDLING OF PREFORMS AND PREPREGS FOR MASS PRODUCTION OF COMPOSITES	EVALUATING LAYERED FIBER COMPOSITE STRUCTURES ACCOUNTING FOR THE ONSET OF DELAMINATION	INTERLAMINAR CRACK DETECTION IN GRAPHENE NANOPLATELET/ CFRP COMPOSITES USING ELECTRIC RESISTANCE CHANGE
	Gerhard Goldbeck(Goldbeck Consulting Ltd), Danilo Di stefano(ESTECO spa)	Norbert Stribeck (University of Hamburg), Konrad Schneider (Institut für Polymerforschung), Ahmad Zeinolebadi (University of Hamburg), Xuke Li (University of Hamburg), Zina Vuluga (Institute ICECHIM), Stephan Volkher Roth (HASYLAB at DESY)	Christian Brecher(Fraunhofer Institute for Production Technology), Michael Emonts(Fraunhofer Institute for Production Technology), Boris Ozolin(Fraunhofer Institute for Production Technology), Richard Schares(Fraunhofer Institute for Production Technology)	Jaan Willem Simon(Rheinisch Westfalische Technische Hochschule Aachen), Bertram Stier(Rheinisch Westfalische Technische Hochschule Aachen), Stefanie Reese(Rheinisch Westfalische Technische Hochschule Aachen)	Babak Ahmadi moghadam(Dalhousie University), Babak Soltannia(Dalhousie University), Farid Taheri(Dalhousie University)
	Micromechanical modeling has been integrated with multi- objective optimization. The integration enables streamlining of workflows such as parametric studies and reverse engineering of material models.	Neat PP is homogeneous, but the composites show a nanostructure gradient and a tumbling of the local fiber axis indicating solidification under turbulent conditions.	A self-adaptable gripper kinematic and an area gripper based on the electrostatic effect support the change from a production with manual handling processes to a robust, fully automated process chain.	A meso-mechanically motivated model for layered composites made of wover fiber-reinforced plastics accounting for delamination is proposed and implemented into a solid-shell finite element.	In this research, the effect of graphene nanoplatet as a means for improving the electrical resistance change-based detection method of invisible delamination in laminates, is investigated.
15:50	STOCHASTIC APPROACH TO MICROMECHANICAL MODELING OF POROUS SOLIDS	MANUFACTURING OF HYBRID STRUCTURES BY PREPREG PRESS TECHNOLOGY	PROCESS PARAMETER STUDIES AND COMPARISON OF DIFFERENT PREFORM PROCESSES WITH NCF MATERIAL	BENDING TEST OF THERMOPLASTIC COMPOSITE CONE	QUANTITATIVE ASSESSMENT BARELY VISIBLE INDENTATION DAMAGE (BVID) ON CF/EP SANDWICH COMPOSITES USING GUIDED WAVE SIGNALS
	Borys Drach(University of New Hampshire), Andrew Drach(University of New Hampshire), Igor Tsukrov(University of New Hampshire)	Christian Lauter(Universitat Paderborn), Tim Krooss(Universitat Paderborn), Thomas Troester(Universitat Paderborn)	Frank Härtel(Universitat Stuttgart), Peter Middendorf(Universitat Stuttgart)	Farjad Shadmehri(Concordia University), Suong Hoa(Concordia University), Mehdi Hojjati(Concordia University)	Lin Ye(University of Sydney), Samir Mustapha(), Xingjian Dong()
	A statistical model is proposed to predict the overall Young's moduli of linearly elastic solids with multiple pores of various shapes (extracted from microCT data of a carbon/carbon composite sample)	This paper will show basic technological investigations in the field of prepreg press technology. This process is an approach to manufacture automotive steel-CFRP-hybrid structures in large series.	In this paper forming processes for NCF materials will be evaluated experimentally and compared. Process limitation will be shown and possible spare processes will be identified.	A tube bending test setup simulating pure bending condition has been developed and a thermoplastic composite cone made using automated fiber placement technique was tested under bending load.	BVID in CF/EP sandwich composites was assessed using guided wave signals. The damage index was defined by the changes in characteristics of guided waves and correlated with the severity of BVID.
16:10	MODELING OF ELASTIC PROPERTIES OF THE CELL WALL MATERIAL IN NANOCLAY-REINFORCED FOAMS	A CASE STUDY ON DIMENSIONAL CHANGE OF GLASS FIBRE REINFORCED POLYMERS AFTER DEMOULDING: A COMBINED EFFECT OF CURE PROGRESSION AND THERMO- VISCOELASTIC BEHAVIOUR		FREE VIBRATION ANALYSIS OF LAMINATED COMPOSITE OPEN CYLINDRICAL SHELLS WITH ARBITRARY BOUNDARY CONDITIONS	QUASI-STATIC INDENTATION AND COMPRESSION AFTER IMPACT DAMAGE GROWTH MONITORING USING MICROFOCUS X-RAY COMPUTED TOMOGRAPHY
	Oksana Shishkina(Katholicke Universiteit Leuven), Larissa Gorbatikh(Katholicke Universiteit Leuven), Stepan V. Lomov(Katholicke Universiteit Leuven), Ignaas Verpoest(Katholicke Universiteit Leuven)	Maziar Shah mohammadi, Lucie Solnickova, Bryn James Crawford, Mojtaba Komeili, Abbas Milani		Tiangui Ye(Harbin Engineering University), Guoyong Jin(Harbin Engineering University), Yuehua Chen(Harbin Engineering University), Hongda Liu(Harbin Engineering University)	Daniel J Bull, Simon M Spearing, Ian Sinclair (University of Southampton)
	A model of the nanoclary-reinforced cell wall is presented. It considers initial cale distribution in a nanocomposite, simulates cell wall stretching during the foaming and predicts its stiffness.	This case study addresses a practical problem during the manufacture of GFRPs where parts undersirably deform after de- moulding, particularly during transport, storage or post- moulding operation.		In this paper, a Chebyshev-Ritz method is presented to analyse the free vibration of laminated composite open cylindrical shells with arbitrary boundary conditions.	X-ray computed tomography was used to monitor damage initiation and growth on carbon fibre materials subjected to quasi-static indentation loads and compression after impact.
16:30			GENERAL ASSEMBLY		
18:30			End		

	Room 525	Room 520f	Room 520be		Room 516ab
14:50			BREAK		
	IMPACT & DYNAMIC RESPONSES 4 Chairs: Francis Collombet, Michael Sutcliffe	INTERFACE 3 Chairs: Isaac M. Daniel, Michael R. Wisnom	Applications - Energy Chairs: Pierre Mertiny, Simon Joncas		DAMAGE AND FRACTURE - POSTER Chair: Ahmed Maslouhi, Navid Zobeiry
15:10	REDUCTION OF SHOCK WAVE AMPLIFICATION IN MULTIPLE BALLISTIC FABRIC LAYER SYSTEMS	INVESTIGATIONS OF INTERFACIAL ADHESION BETWEEN PZT FIBERS AND EPOXY MATRICES	SUBCOMPONENT TESTING FOR ROTORBLADES OF WIND TURBINES	15:10	ENVIROMENTAL EFFECTS OF MOSITURE IN GLASS FIBER POLYMER REINFORCED COMPOSITES Vladimir Alzamora Guzman
	Andi Haris(National University of Singapore), Heow pueh Lee(National University of Singapore), Tong earn Tay(National University of Singapore), Boo cheong Khoo(National University of	Guido Sebastian Sommer(Leibniz Institute of Polymer Research Dresden), Edith Maeder(Leibniz Institute of Polymer Research Dresden), Jan Sander(Leibniz Institute of Polymer Research Dresden)	Arno Van Wingerde(Fraunhofer IWES), Florian Sayer(Fraunhofer IWES), Eric Putnam(Fraunhofer IWES), Falko Bürkner(Fraunhofer IWES), Alexandros Evangelos Antoniou(Fraunhofer IWES)	15:14 15:18	STATIC IMPLEMENTATION OF PERIDYNAMICS FOR THE SIMULATION OF CRACK PROPAGATION Fabio Luongo, Mirco Zaccariotto, Ugo Galvanetto PREDICTING DAMAGE PROPAGATION OF COMPOSITE T-JOINTS USING A MIXED DAMAGE MODEL
	Singapore), vincent Be ian(National University of Singapore) The double-sided tape approach led to decreasing or eliminating the air gap effectively and thus successfully reducing the peak pressure amplification factor of multiple layers of ballistic	Single-fiber fragmentation tests are carried out in order to determine and improve the interfacial adhesion between one type of PZT fibers and a selection of epoxy resin matrices.	The use of subcomponent tests is suggested for the development of rotor blades of wind turbines in addition to current coupon and full-scale tests. Examples are provided and an outline is	15:22	JUYE CHEN FAILURE ANALYSIS OF WOVEN FABTIC CURVED LAMINATE WITH VARIABLE THICKNESSES Junqi Zhang, Longquan Liu, Hai Wang EVALUATION DE SPLICE-TYPE CPACK APRESTER UNDER MODE II TYPE LOADING FOR FOAM CORF
	fabric.	FFFECT OF CVCLIC HYGROTHERMAL AGING ON THE	suggested.	15:26	EVALUATION OF 9F ILCE TIFE CKACK ARKESTER ONDER MODE II TIFE LOADING FOR FOAM CORE SANDWICH PANEL Yasun Hirose Hirolazu Matsuda Go Matsuhara Masaki Hojo Keishiro Yoshida
15:30	ULTRA-HIGH MOLECULAR WEIGHT POLYETHYLENE (DYNEEMA®) FIBER COMPOSITES	INTERLAMINAR SHEAR STRENGTH OF CARBON FIBER/BISMALEIMIDE(BMI) COMPOSITE	CONCEPT IN THE TRAILING EDGE OF WIND TURBINE BLADES	15:30	DAMAGE EVALUATION IN PAPER-BASED FRICTION MATERIALS SUBJECTED TO COMPRESSIVE LOADING Tomoyuki Fujii, Keiichiro Tohgo, Naoya Urata, Yoshinobu Shimamura, Tomohiro Hasegawa, Shintaro Yagi, Yoichi Ito
	Julia Patton Attwood(University of Cambridge), Vikram S Deshpande(University of Cambridge), Norman A Fleck(University of Cambridge)	Ye Li(Beihang University), Yan Zhao(Beihang University), Dong Xiao Sui(Beihang University)	Pietro Bortolotti(Technical University of Denmark), Konstantinos N. Anyfantis(Technical University of Denmark), Christian Berggreen(Technical University of Denmark), Mikkel Lagerbon(),	15:34	CORROSION STUDIES OF SELECTED FIBRE METAL LAMINATES WITH CARBON AND GLASS FIBRES Barbara Surowska
	Compressive failure of UHMWPE composites is investigated, yielding values of the material's shear lag length and pressure	The interlaminar shear strength (ILSS) evolution of carbon fiber(CF)reinforced bismaleimide(BMI) composites during	Raphael Sajous() Experimental and numerical study about the design of reinforcing polymer wires to avoid cracks at the trailing edge of	15:38	INFLUENCE OF THE INTERFACE ON THE APPARENT FRACTURE TOUGHNESS AND CRACK PROPAGATION DIRECTION IN LAYERED CERAMIC COMPOSITES Lubos Nabilis Robustay Masa Pavel Hutar Zienek Maier
	dependency coefficient and improving our understanding of its impact response.	hygrothermal aging were systematically studied through short beam shear tests.	operational wind turbine blades.	15:42	ACTIVE THERMOGRAPHY AS AN EVALUATION METHOD OF DELAMINATIONS IN COMPOSITE Przemysław Daniel Pastuszak, Aleksander Muc
15:50	HIERARCHICAL LIGHTWEIGHT COMPOSITES: GF FABRICS EMBEDDED IN MICROCELLULAR NANOCOMPOSITE PEN	TEMPERATURE DEPENDENCE OF THE INTERFACIAL SHEAR STRENGTH IN GLASS REINFORCED POLYPROPYLENE AND EPOXY COMPOSITES	ENERGY HARVESTING FROM FLUID FLOW USING A VERTICAL COMPOSITE PIEZOELECTRIC LEAF-STALK CONFIGURATION	15:46	DCB TEST SAMPLE OPTIMIZATION FOR MICRO-MECHANICAL TESTING Sanita Zike, Lars Pilgaard Mikkelsen
	Luigi Sorrentino(Consiglio Nazionale delle Ricerche), Livia Cafiero(Consiglio Nazionale delle Ricerche), Salvatore	James Thomason(University of Strathclyde), Liu Yang(University of Strathclyde)	Arvind Deivasigamani(Royal Melbourne Institute of Technology), Jesse Mark Mccarthy(RMIT University), Sabu John(RMIT	15:50	AN INVESTIGATION INTO MATRIX CRACKING IN TRANSVERSE PLIES LEADING TO DELAMINATION CRACKS AT PLY BOUNDARIES. Daniel I Metell David A Tanger Conor T. Mecarthy.
	Iannace(National Research Council) A new lightweight composite structure has been developed,	Measurement and analysis of the interfacial shear strength in	University), Simon Watkins(RMIT University), Floreana Coman() Here, an energy harvesting technique from fluid flow using	15:54	DIRECT NUMERICAL SIMULATION OF DAMAGE PROGRESSION IN LAMINATED COMPOSITE PLATES USING MULTI-SCALE MODELLING
	which mimics the multiscale lightweight composite structure of natural composites based on a high performance thermoplastic polymer.	glass fibre polypropylene and glass fibre epoxy composites measured using the microbond test carried out in a thermomechanical analyser	composite piezoelectric beam is investigated. Computational modelling and experiments are carried out and the results are discussed.	15:58	Nitesh Kumar Karna, Heejin Kang, Kookjin Park, Kyungmin Nam, Chanhoon Chung, Minkee Kim, Ik-hyeon Choi, Sangioon
16:10	NUMERICAL AND EXPERIMENTAL DYNAMIC		HYDROGEN ADSORPTION CHARACTERISTICS OF	-0-04	COMPOSITE Joseph Fitoussi, Michel Bocquet, Fodil Meraghni
	ANALYSIS FOR A CFRP FORMULA SAE IMPACT ATTENUATOR		THE PARTICLES REINFORCED PHENOLIC FOAMS	16:02	MICROMECHANICAL MODELLING OF DAMAGE PROCESSES IN COMPOSITE MATERIALS Darko Ivancevic, Ivica Smojver
	Simonetta Boria(University of Camerino), Jovan Obradovic(Polytechnic Institute of Turin), Giovanni Belingardi(Polytechnic Institute of Turin)		Seung a Song(Chonbuk National University), Seong su Kim(Chonbuk National University)	16:06	ORTHOGONAL STITCHING OF 2D FABRICS FOR IMPROVED DELAMINATION RESISTANCE William Richard Kennon, Prasad Potluri, Devrim Goktas
	This work deals with the lightweight design and the crashworthiness analysis of a composite front impact attenuator		Carbon particles reinforced microcellular phenolic foams (PF) were fabricated to enhance the capacities of hydrogen storage	16:10	IN STI O DAMAGE MECHANISME INVESTIGATION OF POLYAMIDE/STICKI GLASS FIBER COMPOSITE Muhamad fatikul Arif, Nicolas Despringre, Yves Chemisky, Gilles Robert, Fodil Meraghni EATLIDE ASPECTS OF ELEPEMENTAL LAMINATES AFTER LOW VELOCITY AND LOW ENDOCY DIDACT
	for a Formula SAE racing car through the numerical and experimental point of view.		and mechanical properties by using the different types of particles		Jaroslav Bienias
16:00		l	CENERAL ASSEMPTV		
10:30			End		
10:30			Eliu		

					Thursday - August I
7:30	Room 515	Room 519a	Room 514	Room 524ab	Room 524c
8:30		Chair: Stephen Tsai			
	NANOCOMPOSITES II	MULTIFUNCTIONAL COMPOSITES	APPLICATIONS -	EPACTUPE AND DAMAGE 19	CEPAMIC MATPLY COMPOSITES 1
	Chairs: Tina Lekakou, Tony Kinloch	SYMPOSIUM 13 Chair: Yuntian T. Zhu	Chairs: Catharine Marsden, Tony Belcher	Chairs: John D. Whitcomb, Fodil Meraghni	Chairs: Yongting Zheng, Donald W. Radford
9:30	ELABORATION AND INVESTIGATION ABOUT THE MECHANICAL PROPERTIES OF REINFORCED ALIGNED MULTI-WALLED CARBON NANOTUBE CARPETS COMPOSITES	THROUGH-THICKNESS ELECTRICAL RESISTANCE IN GLASS/EPOXY/CNTS COMPOSITE LAMINATES SUBJECTED TO MECHANICAL LOADING	DESIGN CONSTRAINTS OF COMPOSITE LATTICE CYLINDERS FOR AEROSPACE APPLICATIONS	FATIGUE DELAMINATION GROWTH OF ENVIRONMENTALLY AGED/DEGRADED ADHESIVELY BONDED COMPOSITE JOINTS UNDER MODE I LOADING	DURABILITY OF CARBON/CERAMIC COMPOSITES SUBJECTED TO ELECTRICAL LOAD
	Jonathan Bouillonnec(Commisariat a lenergie atomique et aux energies alternatives CEA)	Ali Naghashpour(Concordia University), Suong Hoa(Concordia University)	Takahira Aoki(The University of Tokyo), Hajime Yamazaki(The University of Tokyo), Tomohiro Yokozeki(The University of Tokyo), Keita Terashima(Japan Aerospace Exploration Agency), Toru Kamita(Japan Aerospace Exploration Agency)	Chun Li(National Research Council Canada), Tim Teng(National Research Council Canada), Gang Li(National Research Council Canada), Marko Yanishevsky(National Beccareh Council Canada), Marko Yanishevsky(National	Teresa Gumula(AGH University of Science and Technology), Felix L. Martinez(Universidad Politecnica de Cartagena)
	The goal is to estimate the effect of the characteristics of vertically aligned multi-walled carbon nanotubes (VACNT) carptes on the final mechanical properties of 1D- nanocomposites.	Incorporating carbon nanotubes (CNTs)into epoxy in glass/epoxy/CNTs laminate to make the combined material as sensor can be used for measuring through-thickness strain in the laminate.	The study focuses on the effect of local rotation of composite lattice cylinders under compression, which the global buckling of homogenized cylinders or the local buckling of ribs cannot deal with.	Characterization of delamination/ disbond propagation of an adhesively bonded composite joints that are subjected to environmental ageing and Mode I fatigue loading.	The aim of this work is to investigate electrical properties and efficiency of C/C composites impregnated with polysiloxane preceram as well as their durability in their working conditions.
9:50	ATOMISTIC SIMULATION OF DEFORMATION AND FAILURE MECHANISIMS IN CU/SIC NANOCOMPOSITES	CARBON FIBER / EXPANDED POLYPROPYLENE COMPOSITE FOR ISOTROPIC CONDUCTIVITY	EXPERIMENTAL INVESTIGATION ON ENERGY ABSORBING PRESSURISED COMPOSITE TUBES	FAILURE ANALYSIS AND SIZE SCALING STUDY OF NOTCHED COMPOSITE LAMINATES	DMA AS A METHOD OF MEASURING TOUGHNESS IN INORGANIC POLYMER MATRIX COMPOSITES
	Zhenyu Yang(Beijing University of Aeronautics and Astronautics)	Jeong u Roh(Seoul National University), Woo il Lee(Seoul National University)	Tiansong Hou(University of New South Wales), B. gangadhara Prusty(University of New South Wales), Garth Morgan Kendall Pearce(University of New South Wales), Bohald Wainwright Kelly(University of New South Wales), Rodney Thomson()	Dinh chi Pham(Institute of High Performance Computing A*STAR)	Donald W Radford(Colorado State University)
	This paper focuses on the simulation of deformation and failure mechanisms of Cu/SiC nanocomposites, to elucidate the relationship between length scales and properties of these composites.	The semi-isotropic electrical and thermal conductivities of the carbon fiber/expended polypropylene (EPP) composite were evaluated. The secondary expansion of EPP was effective.	This paper, details the validation through experimental investigation of a novel variable load concept capable of improving energy absorbing structures by using composite materials.	This work presents progressive failure analysis of double- notched [45/90/45/0]s CFRP composite laminate. Size scaling study of this laminate is also investigated experimentally and computationally.	Inorganic polymer matrix composite are modified through interface adjustment and addition of nanofillers. DMA and bend testing are used to evaluate the toughness and the two techniques are compared.
10:10	SWCNT COMPOSITES, INTERFACIAL STRENGTH AND MECHANICAL PROPERTIES	IMPROVED ELECTRICAL CONDUCTIVITY OF CARBON NANOTUBE MAT COMPOSITE PREPARED BY IN-SITU POLYMERIZATION	EFFECT OF ADHESIVELY BONDED COMPOSITE PATCH STIFFNESS ON FATIGUE CRACK GROWTH IN AN ALUMINUM FUSELAGE PANEL	PRELIMINARY EVALUATION OF THE PERFORMANCE OF NOVEL FIBRE REINFORCED PEEL STOPPER CONCEPT IN SANDWICH STRUCTURES	DAMAGE CHARACTERIZATION OF A 3D WOVEN SIC/SIC CMC MATERIALS UNDER LOADING
	R. mikael Larsen(Aalborg University), Jing Ma(Aalborg University)	Seong yun Kim(Korea Institute of Science and Technology)	Reewanshu Chadha(Drexel University), Tein-min Tan(Drexel University), Jonathan Awerbuch(Drexel University)	Georgios Martakos(Aalborg University), Jens H. Andreasen(Aalborg University), Ole T. Thomsen(Aalborg University)	Edith Justine Grippon(Institut de Mecanique et d'Ingenierie de Bordeaux), Stéphane Baste(Universite Bordeaux I), Eric Martin(Universite Bordeaux I), Christophe Aristégui(Universite Bordeaux I), Guillaume Couégnat(Universite Bordeaux I)
	The strain transfer of SWCNT composite material is evaluated by monitoring the Raman 2D band shift and is compared to the mechanical properties.	Fabrication method to enhance processability of the thermoplastic CNT mat composite was developed by using in- situ polymerizable and low viscous cyclic butylene terephthalate oligomers.	This paper focuses on an experimental study of the effect of patch stiffness on fatigue crack growth rate in adhesively bonded composite repairs to metallic fuselage panel.	A new peel stopper concept is proposed for sandwich structures. The new concept is tested in sandwich beam specimens and shown capable of deflecting as well as arresting a propagating crack.	In order to characterize the damage of a 3D woven SIC/SIC CMC, a macroscopic approach, based on ultrasonic measurement of stiffnesses, is coupled to a multi-scale modelling.
10:30	THE ROLE OF NITROGEN ON CARBON NANOTUBES- GRAFTED ACTIVATED CARBON FIBERS	A STUDY OF THE ELECTROMAGNETIC PROPERTIES OF IRON-MULTIWALLED CARBON NANOTUBES COMPOSITES	THERMOPLASTIC COMPOSITES FROM REACTIVE RESIN SYSTEMS - CHALLENGES AND OPPORTUNITIES	EXPERIMENTAL STUDY OF IMPACT DAMAGE RESISTANCE AND TOLERANCE OF COMPOSITE SANDWICH PANELS	
	Yu-chun Chiang(Yuan Ze University)	Gang Liu(Beijing Institute of Aeronautical Materials BIAM), Jianwen Bao(Beijing Institute of Aeronautical Materials BIAM), Ming Jian Sun(Beihang University), Yan Zhao(Beihang University)	Mingfu Zhang(Johns Manville)	Peter Nash(Loughborough University), Gang Zhou(Loughborough University), Sahdev Gahlay(Loughborough University), Mark Burt(Loughborough University)	
	The objective of this paper is to investigate the physicochemical properties of CNTs/ACFs and determine the role of nitrogen on CNTs/ACFs.	Electroless plating was utilized to deposit Iron on the surface of multi-walled carbon nanotubes. The saturation magnetization value is 15.18emu/g	This paper focuses on the materials, processes, and potential applications for fiber glass-reinforced thermoplastic composites based on reactive resin systems.	Under concentrated loads, a multitude of damage mechanisms induced affects the subsequent residual performance sandwich structures, this paper focuses on compression-after-impact (CAI) strength	
10:50		1	BREAK	1	1

Thursday -	August	1
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	Room 522	Room 518ab	Room 520ad	Room 519b	Room 520c
7:30					
0.90		PLENARY (Room 710) - Xiaosu YI:	"How to make high performance stru	ctural composites multifunctional".	Chain Stanhan Taai
	MODELLING AND SIMULATION X	PROCESSING V	AUTOMATED COMPOSITES	METAL MATRIX COMPOSITES I	NON DESTRUCTIVE EVALUATION 1
	Chairs: Thomas Gereke, Andrew Johnston	Chairs: Paul A. Trudeau, Andreas Endruweit	MANUFACTURING V Chairs: Stephen W. Tsai, Ewald Fauster	Chairs: Jason Lo, Helmi Attia	Chairs: Nobuo Takeda, Alexander Horoschenkoff
9:30	AN ORIGINAL APPROACH BASED ON A MODIFIED HALPIN TSAI MODEL TO INVESTIGATE THE MORPHOLOGY OF SEPIOLITE FILLED THERMOSETS	PROCESS INDUCED WARPAGE IN LAMINATED SHELLS	INHERENT CURE OF CARBON FIBRE COMPOSITES USING THEIR ELECTRICAL RESISTANCE	MICROSTRUCTURAL EVOLUTION OF METAL MATRIX COMPOSITES BY IN SITU HIGH ENERGY X- RAY DIFFRACTION	DEVELOPMENT AND TESTING OF A HYBRIDE ACTIVE – PASSIVE ACOUSTIC SHM SYSTEM FOR IMPACT DAMAGE DETECTION IN HONEYCOMB AIRCRAFT STRUCTURES
	Aurélie Taguet(Ecole des Mines d'Alès), Melissa Malige(), Stephane Corn(Ecole des Mines d'Alès), José-Marie Lopez- Cuesta(Ecole des Mines d'Alès)	Jos Sinke(Delft University of Technology)	Simon Antony Hayes(University of Sheffield), Peter Wilson(University of Sheffield), Evdokia Kouzaridou()	Guillaume Geandier, Matthieu Salib, Mickael Mourot, Lilian Vautrot, Moukrane Dehmas, Benoit Denand, Sabine Denis (Institut Jean Lamour - Universite de Lorraine), Elisabeth Aeby-gautier(Centre National de la recherche scientifique CNRS),	Michael Scheerer(Aerospace & Advanced Composites GmbH), Daniel Lager(Aerospace & Advanced Composites GmbH), Firat Goeral(Aerospace & Advanced Composites GmbH)
	The elastic modulus of a VE thermoset reinforced with sepiolite (1.25 to 6.25 wt%) was determined by modal analysis and compared with that obtained by a modified Halpin-Tsai model	The shapes of laminated shells having different constituents warp after curing and further processing. This warping is investigated experimentally and numerically for non- symmetrical laminates.	Results of a study in to cure of carbon fibre composites using their electrical resistance are presented. Local heating of the resin causes it to cure rapidly and use less energy than alternatives.	Metal matrix composite microstructure has been investigated by synchrotron X-ray diffraction. Results shows the evolution of the mechanical state in relation with phase transformation of the matrix.	Within this work the authors present the recent results for damage detection, localization and quantification in composite honeycomb aircraft structures using a active – passive acoustic SHM system
9:50	STOCHASTIC SIMULATION OF COMPOSITES CURE	EFFECT OF VACUUM PRESSURE DURING CURING OF CARBON FIBRE LAMINATES ON THEIR	RELATIONSHIP BETWEEN SLIPPING FRICTION OF PREPREG STACKS AND FORMING QUALITY OF HOT	PART II: PHOSPHORYLATED SOL-GEL FLAME RETARDANT COATING FOR POLYESTER FABRIC	ON THE ANISOTROPIC ATTENUATION BEHAVIOR OF THE FLEXURE MODE OF CARBON FIBER
		MACHINABILITY	COMPOSITE LAMINATES		COMPOSITES
	Tassos Mesogitis(Cranfield University), Alex Skordos(Cranfield University), Andrew C Long(University of Nottingham)	Pierre Coulon(École de technologie supérieure - Université du Québec), Martine Dube(École de technologie supérieure - Université du Québec), Jean-françois Chatelain(École de technologie supérieure - Université du Québec)	Jing Sun(Beihang University), Yizhuo Gu(Beihang University), Min Li(Beihang University), Yanxia Li(Beijing University of Aeronautics and Astronautics), Zuoguang Zhang(Beihang University)	Ahmed Abdeen Younis(National Institute for Standards)	Brian Michael Burks(National Institute of Standards and Technology(NIST)), Marvin A Hamstad(University of Denver)
	The effect of cure kinetics variation due to different resin handling/storage conditions on the cure of advanced composites is investigated in this work.	In this work, the effect of vacuum pressure during curing of carbon fibre laminates on the composite machinability is studied experimentally.	Study the relationship between slipping behavior of prepreg and quality of laminates is very important to understand the hot diaphragm forming technology and control the quality of parts.	Phosphorylated sol-gel coating was used for treatment the polyester fabric to be fire retardant materials. FTIR, TGA, DSC, LOI and UL/94 were used for evaluation the best treatment condition.	In this work, we developed a coupled experimental-numercial approach to investigate the frequency specific far field attenuation behavior of unidirectional carbon fiber composites.
	THREE DIMENSIONAL CONSTITUTIVE FOUNTION	ALICNED SHOPT FIRRE COMPOSITES WITH HICH	EFFECT OF THE TABE SUBSTDATE ODIENTATION ON	PRODUCTION OF BUILK COST FEFECTIVE	APPROACHES FOR AF MONITORING OF
10:10	OF SHAPE MEMORY POLYMERS AND THEIR COMPOSITES	PERFORMANCE	THE TAPE DEFORMATION DURING AUTOMATED TAPE PLACEMENT	MAGNESIUM MATRIX COMPOSITES	DELAMINATION ONSET AND GROWTH IN COMPOSITES
	Haedong Park(Seoul National University), Woong-ryeol Yu(Seoul National University), Philip Harrison(University of Glasgow), Zaoyang Guo(Chongqing University)	Hana Yu(University of Bristol), Kevin Potter(University of Bristol), Michael R Wisnom(University of Bristol)	Xavier Gagné brulotte(McGill University), Arthur Levy(McGill University), Pascal Hubert(McGill University)	Xiaojun Wang, Z Li, Kun Wu, Chengdong Li, Mingjie Shen, Weiqing Liu, Chao Ding (Harbin Institute of Technology)	Ahmed Maslouhi(University of Sherbrooke), Silversides Ian(University of Sherbrooke), Laplante Gabriel(University of Moncton)
	Three dimensional model of shape memory polymer is proposed. The results of validation test are compared with experimental data. And its applications to composites are also presented.	In this paper, high volume fraction (55%) well aligned short fibre composites have been successfully produced with a new manufacturing method.	In the automated tape placement, the consolidation roller induces a spreading of the tape. The effect of the tape to substrate orientation on this widening is studied experimentally and theoretically.	The mechanical stir assisted by ultrasonic method can be used to fabricate bulk SiCp/AZ91 composites. The mechanical properties of composite were evidently improved.	This paper presents methodologies based on acoustic emission (AE) to monitor delamination onset and to evaluate delamination growth in carbon fiber composite materials.
10:30	HYGROTHERMALLY STABLE ASYMMETRIC	COATING POLYMER MATRIX COMPOSITE TOOLING	MODELING OF DEFORMATION OF LAYERS IN	IN SITU SEM MICROBENDING TESTS OF	
	OF DEFORMATION MODES	USING PULSED GAS-DYNAMIC SPRAYING	AUTOMATED FIBER PLACEMENT	COMPOSITES	
	Robert Haynes(US Army Research Laboratory), Erian Armanios(University of Texas at Arlington)	Simon Gosselin(University of Ottawa), Francois Robitaille(University of Ottawa), Mohammed Yandouzi(University of Ottawa), Bertrand Jodoin(University of Ottawa)	Hossein Ghayoor(Concordia University), Suong Hoa(Concordia University)	Pilar Rodrigo(Universidad Rey Juan Carlos), Belén Torres(Universidad Rey Juan Carlos), Lustolde Martínez Laorden(Universidad Rey Juan Carlos), Joaquin Rams(Universidad Rey Juan Carlos)	
	This work presents the bounds on hygrothermally stable asymmetric laminates, and then explores the potential of asymmetric laminates to outperform symmetric laminates.	Palsed gas-dynamic spraying was used for applying thermally conductive copper coatings on carbon fibre composites and for fabricating an integrally heated composite tooling demonstrator.	Thermoplastic composites manufactured by Automated Fiber Placement have an uneven layer thickness, and other unwanted strains. In this paper, the deformation and behavior of layers were studied.	The degradation of different Al/SiCp composites has been evaluated by means of a three-point bending stage in a Scanning Electron Microscope (SEM).	
10:50		1	BREAK		I
2.00					

	Room 525	Room 520f	Room 710		Room 516ab
7:30	<u> </u>	100m <u>J</u> =01	100111/10		10011 91010
8:30		PLENARY (Room 710) - Xiaosu	YI: "How to make high performance s	tructura	al composites multifunctional". Chair: Stephen Tsa
	IMPACT & DYNAMIC RESPONSES 5	INTERFACE 4	THERMOPLASTIC COMPOSITES 1		IMPACT FATIGUE AND DURABILITY - POSTER
	Chair: Hyonny Kim	Chairs: Murray L. Scott, Ozden O. Ochoa	Chairs: Alfonso Maffezzoli, Peter Mitschang		Chair: TBD
9:30	IMPACT ABSORPTION OF COMPOSITES WITH SHEAR THICKENING FLUID FILLED FOAMS	THERMAL PROPERTIES OF CARBON MATERIALS REINFORCED ALUMINUM COMPOSITES FABRICATED BY HOT PRESSING WITH SEMI-LIQUID PHASE	FUSION BONDING OF THERMOPLASTIC COMPOSITES	9:30	DURABILITY AND RELIABILITY ASSESSMENT OF CARBON FIBER REINFORCED POLYMERS IN CIVIL APPLICATIONS
	Varonique Michaud(École polytechnique fédérale de Lausanne)	Hiroki Kurita(ICMCR) Jaan-mare Heintz(ICMCR) Jaan-	Ali Voucofe our		Joo Hwan Yoo, Ki young Kim HIGH CVCLE FATICIJE I JEE EVALUATION OF DAMAGED COMPOSITE POTOP BLADES
	veronique sitenaud(Ecole polyteeninque reuerate de Eausanne)	francois Silvain(Centre National de la recherche scientifique	(National Research Council Canada)	9:34	Youngjung Kee, Seungho Kim
	Open cell foams were impregnated with a colloidal suspension	CNRS) Al-chopped carbon fiber and -Diamond composites were	This presentation addresses critical technical	9:38	THE INFLUENCE OF TEMPERATURE ON THE STRAIN-RATE DEPENDANT MATERIAL BEHAVIOUR OF CFRI UNDER HIGH-DYNAMIC LOADING
	showing a shear thickening effect and encapsulated in silicone.	fabricated by conventional hot pressing with a semi-liquid	aspects of the fusion bonding such as, heat		Ralph Bochynek
	Upon impact, these composite pads could dissipate up to 85% of energy.	pnase. Inermal conductivity of (AI+AI-SI5%)-D50% composite reached 400 W/mK.	generation, process modeling, methodology, process parameters, mechanical performance, and	9:42	EFFECT OF EMBEDDED FIBER OPTIC SENSOR LENGTH AND ORIENTATION ON SIGNAL PROPERTIES DURING FATIGUE LOADING
9:50	ANALYSIS ON LOW-VELOCITY IMPACT DAMAGE OF	CHEMICAL GRAFTING CNT ONTO CF SURFACE BY	automation.		Casey James Keulen, Afzal Suleman, Halit Suleyman Turkmen, Erdem Akay, Esat Selim Kocaman, Mehmet Yildiz
	LAMINATED COMPOSITES USING CDM AND CZM MODELS	ELECTROPHORESIS METHOD		9:46	INFLUENCE OF LOW VELOCITY IMPACT ON THE FATIGUE BEHAVIOR OF WOVEN HEMP/EPOXY COMPOSITE
	Yuxi Jia(Shandong University)	Yuxin Li(Harbin Institute of Technology)			Davi Silva De vasconcellos
				9:50	VIRTUAL TESTING METHODOLOGY FOR THE DEVELOPMENT OF ADVANCED LIGHTWEIGHT DEBRIS CONTAINMENT SYSTEM
	The evolution of the impact damage was investigated. It is found that the tangential delamination is the dominant form of the	The CNT/CF reinforcement with superhigh grafting density was synthesized by combining electrophoresis and chemical grafting			Augustin Gakwaya, Ameur Benkhelifa, Dennis Nandlall, Amal Bouamoul, Marie laure Dano
	interface damage.	methods. IFSS increases 77% after reaction.		9:54	ENVIRONMENTAL CONDITIONING EFFECTS ON THE MECHANICAL PROPERTIES OF TITANIUM FIBER- METAL LAMINATES
	MECHANICAL BEHAVIOUR OF OLASS FIRED	A NEW THED A BOTHCAT DEINEOBOEMENT.	OPTIMUM PROCESSING CONDITIONS FOR		Edson Cocchieri Botelho, Diego Fernando Silva, Antonio carlos Ancelotti jr, Cesar Augusto Damato
10:10	REINFORCED ALUMINIUM HONEYCOMB	GRAFTING GRAPHENE OXIDE ONTO CARBON FIBER	ULTRASONIC WELDING OF THERMOPLASTIC	9:58	INTERFACIAL ADDESION AND FAILGUE RESISTANCE OF POLYRETONE/ RUBBER COMPOSITE
	SANDWICHES		COMPOSITES	10.02	BALLISTIC IMPACT BEHAVIOR OF CARBON NANOTUBE DISPERSED EPOXY RESIN: PARAMETRIC
	Emre Kara(Hitit University), Vincenzo Crupi(University of Messina), Gabriella Epasto(University of Messina), Eugenio	Qingyu Peng(Harbin Institute of Technology)	Irene Fernandez villegas(Delft University of Technology)	10.02	STUDIES Kedar Saniav Pandva. Niranian K Naik
	Guglielmino(University of Messina), Halil Aykul()			10:06	WEAR RESISTANCE INFLUENCERS OF PARTICLE REINFORCED POLYMER COMPOSITE
	The structures realized using sandwich technologies combine	We proposed a new hierarchical reinforcement consisting of	The mechanical properties of TPC ultrasonic welds are		Aare Aruniit, Jaan Kers, Andres Krumme
	low weight with high energy absorbing capacity, so they are suitable for applications in the transport industry.	grapheme oxide and carbon moers. The new interarchical reinforcement has the potential to be applied in high performance polymer composites.	correlated to the process data provided by the weider, which is a very useful tool for fast definition of the optimum processing parameters.	10:10	EXPERIMENTAL DETERMINATION OF AGEING AND DEGRADATION OF GLASS FIBRE REINFORCED COMPOSITES IN PETROCHEMICAL APPLICATIONS
					Anastasios Toulitsis, Morris Roseman, Roderick Martin, Vassilis Kostopoulos
10:30		CARBON NANOTUBE REINFORCED FIBER/EPOXY MULTI- SCALE HYBRID COMPOSITES VIA ELECTROPHORETIC DEPOSITION: MULTIFUNCTIONAL PROPERTIES,	INVESTIGATION OF PROCESS-RELATED DAMAGE DURING THERMAL PIERCING OF A THERMOPLASTIC COMPOSITE	10:14	OPTIMIZATION OF IMPACT PERFORMANCE OF COMPOSITES USING ARTIFICIAL NEURAL NETWORKS AND EVOLUTIONARY ALGORITHMS
		PROCESSING, CHARACTERIZATION AND MODELING	Michaeles Michaeles (1996) - Michaeles Tradited - (1996) (1997) - Maria M		Abul fazal M Arif, Muhammad Haris Malik
		Government Defence Science and Technology Organisation),	Worrall(The Welding Institude (TWI)), Ajay Kapadia(The Welding	10:18	FOREIGN ODJECT IMFACT DAMAGE SIMULATION OF ITTANIUM MATRIX COMPOSITES Tomohiro Yokozeki, Naoki Kootsuka, Kouta Fujiwara, Toyohiro Sato, Akinori Yoshimura, Hirokazu, Shoji
		Erik T Thostenson(University of Delaware)	Institude (TWI)), Stephen L Ogin(University of Surrey), Paul A Smith(University of Surrey)	10:22	FATIGUE TESTING OF CLOSED-CELL FOAMS, SPECIMEN DESIGN AND VISCOELASTIC
		Electrophoresis was used to deposit functionalized multi-walled	The study investigates how process parameters can be optimised	10.22	CHARACTERIZATION
		carbon nanotubes onto unidirectional carbon and glass fabric with significant improvements in mechanical and electrical	to reduce damage during a thermal piercing process for machining holes in thermoplastic composites.		Raphael Gerard, Jamal Fajoui, Fréderic Jacquemin, Pascal Casari
		properties.		10:26	THERMAL BEHAVIOUR OF GLASS FIBRE INVESTIGATED BY THERMOMECHANICAL ANALYSIS
			PDEAK		L. Yang, J. Thomason
10:50			DKEAN		

	Room 515	Room 519a	Room 514	Room 524ab	Room 524c
10:50			BREAK		
	NANOCOMPOSITES III Chair: Tina Lekakou	MULTIFUNCTIONAL COMPOSITES SYMPOSIUM 14 Chairs: Larry Drazl, H. Thomas Hahn	APPLICATIONS 6 Chairs: Catharine Marsden, Tony Belcher	FRACTURE AND DAMAGE 14 Chair: Fodil Meraghni	CERAMIC MATRIX COMPOSITES 2 Chairs: Yongting Zheng, Donald W. Radford
11:10	EFFECT OF NANOCLAY ON FIRE PERFORMANCE OF HYBRID NANOCOMPOSITE	SELECTIVE LASER SINTERING FOR MANUFACTURING OF EXFOLIATED GRAPHITE NANOPLATELETS/POLYAMDIE12 MULTIFUCTIONAL NANOCOMPOSITES	MOLDING AND MECHANICAL PROPERTY OF FIBER BRAIDS RODS	FRACTURE BEHAVIOR OF CARBON FIBER REINFORCED POLYPROPYLENE UNDER ARTIFICIAL LIGHTNING STRIKE	ORDERING NANOSTRUCTURE AND PROPERTIES OF AL203/ZR02 EUTECTIC CERAMIC COMPOSITE PREPARED BY COMBUSTION SYNTHESIS UNDER LOW PRESSURE
	Quynh Thuy Nguyen(University of Melbourne), Priyan Mendis(University of Melbourne), Tuan Ngo(University of Melbourne), Debes Bhattacharyya(University of Auckland)	Mehdi Karevan(Georgia Institute of Technology), Shaun Eshraphi(Georgia Institute of Technology), Suman Das(Georgia Institute of Technology), Kyriaki Kalaitzidou(Georgia Institute of Technology)	Ma Yan(Donghua University, Shanghai), Yuqiu Yang(Donghua University), Hiroyuki Hamada(Kyoto Institute of Technology), Weiguang Song(Kyoto Institute of Technology), S Matsubara()	Shinichiro Yamashita(The University of Tokyo), Isamu Ohsawa(The University of Tokyo), Akiyasu Morita(The University of Tokyo), Jun Takahashi(The University of Tokyo)	Yongting Zheng(Harbin Institute of Technology)
	The effect of organoclay on the fire retardancy of the hybrid nanocomposite was investigated. Taguchi DoE method was used to evaluate the significance of manufacture parameters to the fire retardancy.	This study demonstrates the fabrication of multifunctional polymer nano-composites (PCOS) with booted mechanical and electrical properties made by selective laser sintering (SLS) v.s. melt mixing.	By using different braiding structures, ropes were used in pultrusion to make rods. Discussing and analyzing the influence on the mechanical properties.	We performed the artificial lightning strike experiment using CF/PP spectrums developed in the Japanese project in order to understand the basic fracture behavior under direct lightning strike.	Al2O3/ZrO2 euteetic ceramics were prepared by combustion synthesis under low pressure. The bending strength and fracture toughness can reach 1060MPa and 11.2 MPa m1/2, respectively.
11:30	EFFECT OF MORPHOLOGY ON FRACTURE TOUGHNESS OF THERMOPLASTIC/THERMOSET/CLAY HYBRID NANOCOMPOSITES	OPTIMAL FIBER PLACEMENT INCLUDING EFFECTS OF EMBROIDERY	DAMAGE SENSING IN FIBRE-REINFORCED COMPOSITES USING CARBON NANOTUBE NETWORKS BY SPRAY COATING	SHORT FIBER INTERFACIAL TOUGHENING FOR COMPOSITE-FOAM SANDWICH	MECHANISM OF CRACK PROPAGATION/DEFLECTION AT FIBER MATRIX INTERFACE IN CERAMICS MATRIX CONTINUOUS FIBER REINFORCED COMPOSITES
	Sina Chaeichian(Concordia University), Paula Wood- adams(Concordia University), Suong Hoa(Concordia University)	Tatsuya Nishida(Nagoya University), Tadashige Ikeda(Nagoya University), Atsuhiko Senba(Nagoya University)	Han Zhang(Queen Mary and Westfield College, University of London)	Zhi Sun(Dalian University of Technology), Shiyong Sun(Dalian University of Technology), Shanshan Shi(Dalian University of Technology), Haoran Chen(Dalian University of Technology), Xiaozhi Hu(University of Western Australia)	Michael Braginsky(University of Dayton), Craig P Przybyła(AFRL/RXCC)
	A novel technique was used for toughening of unsaturated polyesters by elay/thermoplastic combination.Morphology effect on fracture toughness of the nanocomposites was investigated.	A design method for fiber placement with an embroidery machine was improved by considering effects of the fiber direction, fiber density, thickness variation, and threads.	Air-brushing techniques is used for the deposition of CNTs onto CF fabric/Preyreg, not only introducing damage sensing capability but also enhance the mechanical performance to composites.	A low-density short-fiber interlaminar toughening technique using aramid finers and glass fibers was studied.Gc were measured to quantify the effect of short-fiber interlaminar toughening.	The extended finite element method is employed to determine the influence of the fiber coating in cerariane matrix composites on the development/propagation of cracks at the scale of the fibers.
11:50	PROCESSING AND TACTICITY EFFECT ON GLASS TRANSITION TEMPERATURE OF PMMA/GRAPHENE NANO-COMPOSITES.	ULTRASTRONG, STIFF AND MULTIFUNCTIONAL CARBON NANOTUBE COMPOSITES	COMPOSITE PRESSURE VESSELS FOR COMMERCIAL APPLICATIONS	PREDICTING THE THROUGH-THICKNESS ENHANCEMENT OF Z-PINNED COMPOSITE LAMINATES	3YTZP-NANOALUMINA-NANODIAMOND COMPOSITES WITH GEMOLOGICAL PROPERTIES
	Shigeru Aoyama(University of Minnesota - Twin Cities Campus), Ken- Hsuan Liao(University of Minnesota - Twin Cities Campus), Christopher W. Macosko(University of Minnesota - Twin Cities Campus)	Yuntian T. Zhu(North Carolina State University)	Luis Andre pinto Oliveira(Pole for Innovation in Polymer Engineering), Joao Pedro Nunes(Universidade do Minho), Joao Francisco Silva(Instituto Politencico do Porto), Bruno Henrique rodrigues Barros(), Luis Manuel Amorim(), Jose Miguel Vasconcelos(VIDROPOL, S.A.)	Galal F.a. Mohamed(University of Bristol), Fabrice Helenon(National Composites Centre), Stephen Richard Hallett(University of Bristol), Mehdi Yasaee(University of Bristol), Giuliano Allegri(University of Bristol)	Luis Antonio Díaz(CINN-CSIC)
	In situ polymerization of MMA with graphene resulted in increased Tg of atactic PMMA but solvent blending did not. However, solvent blending of isotactic PMMA did increase Tg.	Here we report the fast incorporation of long CNTs into polymer matrix using a novel approach, stretch-winding, to produce composites that are much stronger than any current engineering composite.	Composite pressure vessels for large scale markets are studied. They consist on a plastic liner wrapped with a fiber reinforced composite deposited by multi-axial filament winding prototype equipment	To predict the interlaminar fracture in z-pin reinforced composite laminates, a numerical approach that combines the cohesive FE method with a semi-analytical bridging model is presented.	Design and characterization of a new family of zirconia- alumina- nanodiamond composites that can be used in gemology, dentistry and other applications.
12:10	ON SLIDING FRICTION OF PEEL-PLY TEXTURED EPOXY RESIN SURFACES CONTAMINATED BY AIRCARFT OPERATING FLUIDS	COMPARING ELECTROMECHANICAL CHARACTERISTICS OF POLYMER – CARBON NANOTUBE AND POLYMER – CARBON FIBRE – CARBON NANOTUBE COMPOSITES	METALIZED CARBON FIBERS FOR SOLDERABLE AND WEAR-RESISTANT COMPOSITE MATERIALS	DELAMINATION INITIATION DUE TO INTERLAMINAR TENSION IN FIBRE REINFORCED PLASTICS	
	Lennart Weiß(Deutsches Zentrum fuer Luft- und Raumfahrt e.V. (DLR)), Thilo Glaser(Deutsches Zentrum fuer Luft- und Raumfahrt e.V. (DLR)), Christian Hühne(Deutsches Zentrum fuer Luft- und Raumfahrt e.V. (DLR))	Cyrill Cattin(McGill University), Wenjiao Liu(McGill University), Pascal Hubert(McGill University)	Matthias Nier, Toni Böttger, Falko Böttger-hiller, Daniela Nickel, Ingolf Scharf, Daisy Nestler, Bernhard Wielage, Thomas Lampke (Technische Universitat Chemnitz-Zwickau)	Jamie Peter Blanchfield(University of Bristol), Giuliano Allegri(University of Bristol)	
	Employing a pin-on-flat type test apparatus, effects of texture and contamination by aircraft operating fluids on the sliding friction response of epoxy resin surfaces are investigated.	This research looks at the potential of carbon nanotube modification for improved electrical resistance measurement based strain sensing in carbon fibre epoxy composites.	Metalized carbon fibers provide a strong interface for wear- resistant top coatings on carbon fiber reinforced polymers. Also joining zones for the soldering of metals with composites are achieved.	This research focuses on the generation of SN-curves for the initiation of delamination in a carbon-fibre peopy composite. The test methods used and the detection of damage initiation are discussed.	
12:30			LUNCH		

	Room 522	Room 518ab	Room 520ad	Room 519b	Room 520c
10:50			BREAK		
-	MECHANICAL PROPERTIES 1 Chair: Peter Hine	PROCESSING VI Chairs: Paul A. Trudeau, Andreas Endruweit	AUTOMATED COMPOSITES MANUFACTURING VI Chair: Stephen W. Tsai, Ralf Schledjewski	METAL MATRIX COMPOSITES II Chairs: Jason Lo, Helmi Attia	NON DESTRUCTIVE EVALUATION 2 Chairs: Nobuo Takeda, Alexander Horoschenkoff
11:10	INTERFACE-CORRELATED BONDING PROPERTIES OF A ROLL BONDED AL-CU SHEET	DEVELOPMENT AND PROCESSING OF INTERMEDIATE MATERIAL FOR CONTINUOUS FIBER REINFORCED THERMOPLASTIC COMPOSITES	SENSOR GUIDED CURE PROCESSES – A STUDY OF PRODUCTIVITY AND QUALITY OPTIMIZATION POTENTIAL	MICROSTRUCTURE AND MECHANICAL BEHAVIOR OF 6061 AL ALLOY REINFORCED WITH SICP NANOPARTICLES PROCESSED BY EXTRUSION AND COLD ROLLING	INSPECTION OF COMPOSITE COMPONENTS BY PURE GUIDED WAVE BASED ULTRASONIC IMAGING WITH ONE PHASED ARRAY PROBE.
	Kwang seok Lee(Korea Institute of Materials Science), Yong- nam Kwon(Korea Institute of Materials Science)	Kazufumi Nakazawa(Kyoto Institute of Technology), Toshihiro Motochika(Kyoto Institute of Technology), Mitsurou Takagi(Kaji Group Co. Ldt), Akio Ohtani(Gifu University), Asami Nakai(Gifu University)	Nico Liebers, Daniel Stefaniak, Markus Kleineberg, Martin Wiedemann (Deutsches Zentrum fuer Luft- und Raumfahrt e.V. (DLR))	Xia Jiang(University of Oxford), Alexander Knowles(University of Oxford), Marina Galano(University of Oxford), Fernando Audebert(University of Buenos Aires)	Michel Castaings(Universite Bordeaux I), Alban Leleux(Universite Bordeaux I), Philippe Micheau(University of Sherbrooke)
	The effect of reduction ratio on the mechanical properties of roll- sonded A/JCu clad metal was studied. The highest reduction ratio adopted in this study exhibited excellent mechanical properties.	We have developed a new intermediate material for continuous fiber reinforced thermoplastic composities in which carbon fibers and resin fibers were commingled.	Report of a trial of a variation of autoclave cure cycles to determine the time saving potential of ultrasound sensor guided process control and validation of achieving similar mechanical properties.	Powder processed 6061 AI alloy reinforced with SiC nanoparticle composites followed by extrusion and cold rolling have been analyzed in both "as extruded" and "as rolled" condition.	A removable, multi-element, ultrasonic, matrix probe is used for generating/detecting Lamb modes in/from principal directions of orthotropic materials, and for imaging defects in composite components.
11:30	CRUSH RESPONSE OF 2D AND 3D HYBRID WOVEN COMPOSITES	EVALUATION OF THE FRACTURE TOUGHNESS OF COMPOSITE/ADHESIVE INTERFACE APPLIED BY IN- MOLD SURFACE MODIFICATION UNDER MODE II LOADING	AN EXPERIMENTAL INVESTIGATION ON BUCKLING BEHAVIOR OF VARIABLE ANGLE TOW LAMINATES SUBJECTED TO UNIFORM COMPRESSION LOAD	MICROSTRUCTURE AND PROPERTIES OF TIB2-TIAL COMPOSITES SHEETS PREPARED BY FOIL METALLURGY	EXAMINATION OF DRAPE-INDUCED DEFECTS USING COMPUTER X-RAY TOMOGRAPHY
	Mark Pankow(North Carolina State University), Anthony M Waas(University of Michigan - Ann Arbor), Chian-fong Yen()	Yukimoto Yoshikazu(Tokyo University of Science)	Aymen Marouene(Ecole Polytechnique de Montreal)	Xiping Cui(Harbin Institute of Technology)	James Stephen Lightfoot(University of Bristol), Kevin Potter(University of Bristol), Michael R Wisnom(University of Bristol)
	Through the thickness response of 2D and 3D composites comprised of carbon, glass, and kevlar have been examined to determine their response to loading.	We proposed in-mold surface modification and evaluated the resistance to crack propagation of CFRP/adhesive interface applied by the modification under mode II loading.	This paper presents the results of an experimental investigation of the buckling behavior of variable stiffness laminates made by Automated Fiber Placement.	TiB2-TiAl composite sheets prepared by foil metallurgy exhibit unique micro-laminated structure and enhanced tensile properties and thus show potential for high-temperature structural applications.	CT scanning has been trialled as a possible NDE for woven performs technique firstly using arbitrary geometry, showing a number of defects. Trial propeller blade performs were also scanned.
11:50	THE HIVOCOMP PROJECT: CARBON FIBRE/PA12 HYBRID SINGLE POLYMER COMPOSITES	A NOVEL COMPOSITION FOR REMOVABLE INNER TOOLING OF HOLLOW COMPOSITE STRUCTURES	THE EFFECTS OF TRANSVERSE SHEAR DEFORMATION ON TOW STEERED COMPOSITE LAMINATES	IN-SITU SYNTHESIZED MAGNESIUM MATRIX COMPOSITES	THE INFLUENCE OF DELAMINATION OPENING IN CARBON FIBRE/EPOXY LAMINATES ON SIGNAL CHARACTERISTICS OF PULSE PHASE THERMOGRAPHY
	Peter Hine(University of Leeds), Yentl Swolfs(Katholieke Universiteit Leuven), Ian Ward(University of Leeds), Ignaas Verpoest(Katholieke Juiversiteit Leuven), Mark Bonner(University of Leeds), Maximilian Mitwalsky(Technische Universitat Munchen)	David Schultheiss(Technische Universitat Munchen), Cornelia Becker(Technische Universitat Munchen), Swen Zaremba(Technische Universitat Munchen), Christoph Ebel(Technische Universitat Munchen), Klaus Drechsler(Technische Universitat Munchen)	Rainer J. Groh(University of Bristol), Paul M Weaver(University of Bristol)	Tongxiang Fan(Shanghai Jiao Tong University)	Henrik Schmutzler, Narumichi Sato, Alejandro Garcia, Martin Schuett, Hans Wittich, Hermann Rohling, Karl Schulte (Technische Universitat Hamburg-Harburg) Masaaki Nishika, Masaki Hojo (Kyoto University)
	A study of the production and properties of hybrid composites manufactured from co-mingled T700 carbon fibres and oriented PA12 fibres.	In this paper a novel composition of a removable inner tooling based on gypsum plaster is presented. First tests and results will be depicted.	A single-layer model is used to assess transverse shear effects in bending of tow steered laminates. The shear terms are related to Timoshenko's shear factor and derivatives of the bending rigidity.	TiC reinforced Mg matrix composites were successfully synthesized by spontaneously infiltrating molten Mg alloy into Al-Ti-C preforms and in situ forming TiC particles in the liquid of Mg alloy.	The influence of delamination opening on pulse phase thermography is investigated using DCB and CAI tests. With increasing delamination opening the contrast of the thermography results increases.
12:10	STUDY OF NOTCH-SENSITIVITY OF CARBON-GLASS INTRAPLY LAMINATES FOR AEROSPACE APPLICATIONS	CURE MONITORING OF THICK CFRP LAMINATE BY OPTICAL-FIBER-BASED DISTRIBUTED SENSOR	DESIGN AND MANUFACTURING OF OPTIMUM VARIABLE STIFFNESS LAMINATES	CARBON NANOTUBE (CNT)-ALUMINUM: TOWARDS CNT-REINFORCED ALUMINUM CONDUCTOR CABLES	
	Don Lee(Toray Composites (America)), Jeffrey Satterwhite(Toray Composites (America))	Yusaku Ito(Tokyo University), Takato Obo(Tokyo University), Shu Minakuchi(The University of Tokyo), Nobuo Takeda(The University of Tokyo)	Kazem Fayazbakhsh(McGill University), Mahdi Arian nik(McGill University), Damiano Pasini(McGill University), Larry Lessard(McGill University), Jihan Chen(National Research Council Canada), Ali Yousefpour(National Research Council Canada)	Orson Bourne, Jingwen Guan, Michael Jakubinek, Shuqiong Lin, Ryan Macneil, Benoit Simard (National Research Council Canada), Ainul Akhard (University of British Chumbia), Frank Ko(University of British Columbia), Jason Lo, Ruby Zhang(CANMET, Natural Resources Canada)	
	Hybridization of earbon fiber with glass fiber was studied. Hybridized panels showed acceptable property retention in basic mechanical tests (tension and shear tests) as well as advanced ests (CAI).	This study utilized the optical-fiber-based distributed sensor for cure monitoring of thick composite material. The strain distribution in the cure and cooling processes was monitored.	This paper includes experimental investigation and Finite Element Analysis (FEA) of variable stiffness laminates to determine the effect of manufacturing defects on their structural performance.	CNT-AI composites with conductivity comparable to AI are reported. Initial tests show significant improvement in strength, which is encouraging in terms of the potential for CNT- reinforced AI cables.	
12:30			LUNCH		
	Room 525	Room 520f	Room 520be		Room 516ab
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10:50			BREAK		
	IMPACT & DYNAMIC RESPONSES 6 Chair: Hyonny Kim	INTERFACE 5 Chairs: Murray L. Scott, Ozden O. Ochoa	THERMOPLASTIC COMPOSITES 2 Chairs: Alfonso Maffezzoli, Peter Mitschang		NANOCOMPOSITES I - POSTER Chairs: Erik T Thostenson, Behnam Ashrafi
11:10	COMPRESSION AFTER IMPACT STRENGTH OF A BUCKLING RESISTANT TOW STEERED PANEL	MECHANICAL PERFORMANCE OF GLASS WOVEN FABRIC COMPOSITE: EFFECT OF HYBRID INTERPHASE WITH DIFFERENT SURFACE TREATMENT AGENTS	EXPERIMENTAL CHARACTERISATION OF RECYCLED (GLASS/TPU WOVEN FABRIC) FLAKE REINFORCED THERMOPLASTIC COMPOSITES	11:10	ELECTRICAL PROPERTIES OF SELF-ALIGNED IN-SITU REDUCED GRAPHENE OXIDE/EPOXY NANOCOMPOSITES Nariman Yousefi, Xiuyi Lin, Qingbin Zheng, Xi Shen, Jayaram R Pothnis, Jingjing Jia, Jang-kyo Kim
	Andrew Thomas Rhead(University of Bath), Richard Butler(University of Bath), Wenli Liu(University of Bath), Stephen Richard Hallett(University of Bristol), Byungchul Kim(University of Bristol)	Kohsuke Togashi(Kyoto Institute of Technology), Mengyuan Liao(Kyoto Institute of Technology), Yuqiu Yang(Donghua University), Hiroyuki Hamada(Kyoto Institute of Technology)	Mohammed iqbal Abdul rasheed(University of Twente), Remko Akkerman(University of Twente), Bert Rietman(University of Twente), Hendrikus A. Visser(University of Twente)	11:14	WRINKLING IN GRAPHENE OXIDE PAPERS: EFFECT ON YOUNG'S MODULUS Xi Shen, Xiuyi Lin, Nariman Yousefi, Jingjing Jia, Jang-kyo Kim THE TOUGHNESS OF EPOXY POLYMERS AND FIBRE COMPOSITES MODIFIED WITH RUBBER
	Optimised, steered fibre laminates, manufactured using Continuous Tow Shearing have regions of high stress. The effect on residual compressive strength of impact to these regions is investigated.	Resin impregnation and the interfacial interaction of fiber/matrix after treating by polyurethane, silane coupling and its hybrid interphase treatment were investigated.	This paper deals with the experimental characterisation of tensile strength of recycled thermoplastic composites; compression molded with flake like reinforcements having random size and orientation.	11:22	MICROPARTICLES AND SILICA NANOPARTICLES Tony Kinloch NANOCLAY EXFOLIATION PROCESS FOR EPOXY/ORGANOCLAY NANOCOMPOSITES: EFFECT OF EPOXY
11:30	EFFECT OF BASALT FIBRE HYBRIDIZATION ON THE LOW VELOCITY IMPACT BEHAVIOUR OF WOVEN	SURFACEMODIFICATIONS ON BASALTFIBERS	TENSILE BEHAVIOUR OF CARBON FIBRE COMPOSITES HYBRIDISED WITH SELF-	11/06	REACTIVE DILUENTS AND DIAMINE CURING AGENTS Wiwat Keyoonwong, Masatoshi Kubouchi, Saiko Aoki IMFROVED YOUNC'S MODILUES OF GRAPHENE PAPERS MADE FROM LARGE GRAPHENE OXIDE SHEETS
	CARBON FIBRE/EPOXY LAMINATES	Yanpei Li(Donghua University, Shanghai), Jilong Wang(Donghua	REINFORCED POLYPROPYLENE Yentl Swolfs(Katholieke Universiteit Leuven), Liesbet	11:26	Xi Shen, Xiuyi Lin, Nariman Yousefi, Jingjing Jia, Jang-kyo Kim
	Valente (University of Roma La Sapienza), Salvatore Cioffi(Consiglio Nazionale delle Ricerche), Salvatore Iannace(National Research Council), Luigi Sorrentino(Consiglio Nazionale delle Ricerche)	University, Shanghai), Hiroyuki Hamada(Kyoto Institute of Technology), Yiping Qiu(Donghua University, Shanghai), Yang Yuqiu(Donghua University, Shanghai)	Crauwels(Katholieke Universiteit Leuven), Larissa Gorbatikh(Katholieke Universiteit Leuven), Peter Hine(University of Leeds), Ian Ward(University of Leeds), Ignaas Verpoest(Katholieke Universiteit	11:30	ELECTRICAL PROPERTY OF MULTIWALLED CARBON NANOTUBES/EPOXY COMPOSITES Jun Li, George Zhenghong Zhu, Shen Gong
	Interpy woven basalt-carboh/epoxy composites were impacted and the influence of impact energy on their flexural residual properties was assessed by bending tests monitored by acoustic emission.	This study aims to investigate the effects of plasma or polyurethane dispersion (PUD) treatments on the basalt fiber surface properties.	Self-reinforced and carbon fibre reinforced polypropylene to obtain hybrid composites with high stiffness and strength, but without losing the ductility of the self-reinforced polypropylene.	11:34	MECHANICAL PROPERTIES AND ENERGY ABSORPTION BEHAVIOUR OF POLYMER-NANOCOMPOSITES James Njuguna, Laura Gendre, Jinchun Zhu THERMAL ELASTIC BUCKLING OF PLATES MADE OF CARBON NANOTUBE-REINFORCED POLYMER
11:50	IMPACT BEHAVIOUR OF ELASTOMER BASED FIBRE METAL LAMINATES	ADHESION BETWEEN A FLAX FIBER AND BIOBASED THERMOSET MATRIX	SUSCEPTORLESS CONTINUOUS INDUCTION WELDING OF CARBON FIBER REINFORCED THERMOPLASTICS	11:42	COMPOSITE MATERIALS Jairan Nafar dastgerdi FABRICATION OF AG-MWNT COMPOSITE NANOPASTE FOR STRETCHABLE AND PRINTABLE
	Raj Das(University of Auckland), Sanjeev Rao(Centre for Advanced Composite Materials), Richard Lin()	Laetitia Marrot(Universite de Bretagne Sud)	Martina Hümbert(Institut fuer Verbundwerkstoffe GmbH), Peter Mitschang(Institut fuer Verbundwerkstoffe GmbH)	11.42	ELECTRONICS Kwang-seok Kim, Bum guen Park, Kwangho Jung, Seung-boo Jung MANIE ACTURING AND CHARD ACTERIZATION OF
	Novel Fibre Metal Laminates (FML) with thermoplastic elastomers have been manufactured and characterised to improve energy absorption capabilities and to develop shock	New biobased thermoset resins start to appear on the biocomposite market. The adhesion between this new type of resins and a flax fiber is investigated at the micro and	Within this paper, the influence of a surface cooling on the through-thickness heat distribution during susceptorless induction welding of carbon fiber reinforced thermoplastics was	11:46	Dakyong Yong, Jaging Yoo, Taemin Hong, Seunggoo Le MECHANICAL BEHAVIOR OF SILANE GRAFTED GRAPHENE NANOPLATELETS / SILICONE RUBBER COMPOSITED ELIVIOR OF SILANE GRAFTED GRAPHENE NANOPLATELETS / SILICONE RUBBER
	and impact resistant composites.	macroscopical scale.	investigated.		Ting-yu Wu, Ting-yu Chang
12:10	STRAIN RATE SENSITIVITY OF E-GLASS/LPET AND E- GLASS/EPOXY UD LAMINATES	COMPOSITES:INTERFACIAL CHARACTERISTICS	SQUELE FLOW OF RANDOMETORIENTED STRANDS THERMOPLASTIC COMPOSITES		
	Rasmus Eriksen(Technical University of Denmark), Janice Marie Dulieu-barton(University of Southampton), Duncan Andrew Crump(University of Southampton), Christian Berggreen(Technical University of Denmark)	Cameron Hadden(Michigan Technological University)	Gilles-philippe Picher-martel(McGill University), Arthur Levy(McGill University), Pascal Hubert(McGill University)		
	The influence of the matrix ductility on the strain rate sensitivity in the through-thickness direction of unidirectional (UD) E- glass fibre reinforced polymer composite is studied.	Molecular dynamics simulations were used to create models of EPON-862 epoxy in the presence of a graphite surface. The interfacial molecular composition is examined and reported.	Studying the flow front provided a better understanding of the forming mechanisms of ROS composites. The results obtained in this work will provide insight to the forming of complex composite parts.		
12:30			LUNCH		

10:00	Room 515	Room 519a	Room 514	Room 524ab	Room 524c
13:30		PLENARY (Room 710) - Mic	chael Wisnom: "The challenge of predi	cting failure in composites".	
	NANOCOMPOSITES IV Chairs: Carlos Alberto Cimini Jr., Jang-Kyo Kim	ENERGY DEVICES 1 Chairs: Emile Smith Greenhalgh, Leif Erik Asp	APPLICATIONS 7 Chairs: Dirk Lukaszewicz, Leroy Michel	FRACTURE AND DAMAGE 15 Chairs: Kenneth L. Reifsnider, Michael John Hinton	Chair: François Trochu CERAMIC MATRIX COMPOSITES 3 Chairs: Yongting Zheng, Donald W. Radford
14:30	HYBRID WOVEN GLASS FIBRE FABRIC-CARBON NANOTUBE-EPOXY COMPOSITES	COATED CARBON FIBRE BATTERY HALF-CELLS FOR STRUCTURAL BATTERY COMPOSITES	APPLICABILITY OF C-PLY BI-ANGLE NCF TO AIRCRAFT PARTS	EXPERIMENTAL AND NUMERIC MULTISCALE ANALYSES OF FAILURE MECHANISMS ON PULTRUDED POLYMERIC COMPOSITE MATERIAL	A MESO-SCALE NUMERICAL APPROACH FOR DAMAGE AND FAILURE IN SHORT FIBRE REINFORCED CERAMICS
	Tina Lekakou(University of Surrey)	Leif Erik Asp, Tony Carlson (Swerea SICOMP), Goeran Lindbergh, Simon Leijonmarck, Maria Hellqvist Kjell (Royal Institute of Technology), Alexander Bismarck, Henry Maples(Imperial College of Science)	Akira Kuraishi(Kawasaki Heavy Industries Ltd.), Toru Itoh(Kawasaki Heavy Industries Ltd.), Jyunichi Kimoto(Kawasaki Heavy Industries Ltd.), Sayaka Ochi(Kawasaki Heavy Industries Ltd.), Noriyoshi Hirano(Kawasaki Heavy Industries Ltd.)	Henri-alexandre Cayzac(Ecole Nationale Superieure des Mines de Paris), Schastien Joannès(Ecole Nationale Superieure des Mines de Paris), Lucien Laiarinandrasana(Ecole Nationale Superieure des Mines de Paris)	Alessandro Airoldi, Paolo Iavarone, Luca Di landro, Gabriele Imbalzano (Polytechnic Institute of Milan), Marco Orlandi (Brembo SGL Carbo Ceramic Brakes), Massimiliano Valle (Petroceramics spa)
	Hybrid composites with electrospun MWNT-epoxy interlayers had increased penetration energy (by 22%) and damage area (by 145%) under impact, compared with the standard glass fabric- epoxy laminates.	We present a novel structural battery composite material concept.By coating a thin SPE on to carbon fibre electrodes an extremly short distance for Li-ion transportation is achieved.	The applicability of C-ply Bi-angle NCF to aircraft parts was evaluated through the fabrication trial of the representative stiffeners and the strength tests performed with and without impact damage.	Experimental and numerical investigations on a pultruded composite material have been performed in order to study the influence of microstructural variabilities on failure mechanisms.	The paper presents a numerical approach for damage development and failure in short fibre reinforced C-SiC composites based on non-linear finite element models developed at the meso-scale level.
14:50	FUNCTIONAL COMPOSITES OF EPOXY / SILVER- FILLER USING SELF-ASSEMBLY PHASE STRUCTURES	DURABILITY AND DEGRADATION OF POLYMER MATRIX COMPOSITES AT ELEVATED TEMPERATURE AND PRESSURE FOR WAVE AND TIDAL ENERGY DEVICES	SUPPRESSION OF DELAMINATION CRACK FOR THE FOAM CORE SANDWICH PANEL JOINT	CORELLATIONS OF DAMAGE MECHANISMS AND MATERIAL MICRO-STRUCTURE IN TENSILE LOADED HOOP STRUCTURES	STABILITY OF T-ZRO2 PARTICLES IN ALUMINA- ZIRCONIA COMPOSITES: PART. 1 COMPETITION BETWEEN SIZE AND STRAIN EFFECT
	Hajime Kishi(University of Hyogo)	Zhongyi Yi Zhang(University of Portsmouth)	Keishiro Yoshida(Kanazawa Institute of Technology), Hisayuki Kimura(Kanazawa Institute of Technology), Yasuo Hirose(Kanazawa Institute of Technology), Akira Kuraishi(Kawasaki Heavy Industries Ltd.)	Anna E Scott(University of Southampton), Ian Sinclair(University of Southampton), Simon M Spearing(University of Southampton), Mark N Mavrogordato(University of Southampton), Warren Hepples()	Camille Rabache(Ecole Centrale de Paris), Guillaume Bouchet(), Guillaume De calan(), Jean-michel Kiat(Ecole Centrale de Paris), Nicolas Guiblin(Ecole Centrale de Paris), Florence Porcher()
	Electric conductivity and adhesive properties of epoxy/silver- fillers composites were studied in relation to the phase structures of the epoxy/polyethersulfone for the matrix resins of the composites.	Water absorption and ILSS of PMCs were determined to characterize the durability and degradation behaviours at elevated temperature and pressure for wave and tidal energy devices.	For the tapered end-closure type joint of CFRP face and foamed plastic core sandwich panels, how to design the taper angle to suppress the initial failure is investigated.	Computed Tomography has resolved material-structure and damage-mechanisms in loaded composite-structures, 3D- tessellation has determined correlations between the damage and material structure.	Structural properties of alumina-zirconia composites produced at massive scale have been studied to understand the influence of composition, grain size, strain, additional phases, temperature, etc
15:10	ELECTROSPUN NANOFIBROUS COMPOSITES TO CONTROL DRUG RELEASE AND INTERACTION BETWEEN HYDROPHILIC DRUG AND HYDROPHOBIC BLENDED POLYMER MATRIX	PERFORMANCE OF LITHIUM-INTERCALATED CARBON FIBRES FOR STRUCTURAL ELECTRODE APPLICATIONS	EUROPEAN COMPOSITES DEVELOPMENTS FOR LAUNCHERS APPLICATIONS	IN-SITU TENSILE FIBRE FAILURE ANALYSIS BY SYNCHROTRON RADIATION COMPUTED TOMOGRAPHY	SYNTHESIS OF CMC MATRIX BY NITRIDATION OF TISI2
	Yu Dong(Curtin University of Technology), Hazim J. Haroosh(Curtin University of Technology)	Eric Jacques, Dan Zenkert, Maria Hellqvist Kjell, Göran Lindberg, Mårten Behm(Royal Institute of Technology)	Rafael Bureo dacal(European Space Agency)	Hannah Morton(University of Southampton), Philippa Reed(University of Southampton), Ian Sinclair(University of Southampton), Simon M Spearing(University of Southampton), Anna E Scott(University of Southampton)	Jerome Roger(Universite Bordeaux I), Laurence Maillé(Universite Bordeaux I), Marie-anne Dourges(Universite Bordeaux I)
	A novel electrospun hybrid nanocomposite structure was generated by combining PLA:PCL blends with HNT-ASP to overcome a poor drug-carrier interaction.	This paper focuses on the effect of intercalated lithium on the mechanical properties of the carbon fibre for lightweight structural electrode applications.	This paper will present an innovative research on composite material structures and will show an extended application range for composite materials and novel design concepts for launcher applications.	SRCT is used to analyse the interaction of fibre breaks in CFRP coupons, loaded in tension in situ. The results show that fibre break cluster formation varies between representative CFRPs.	The effects of temperature and grain size on the nitridation of TiSiz by pure nitrogen were examined at temperatures comprised between 1000 and 1200°C for durations up to 100 hours.
15:30	CERAMIC/METAL NANOCOMPOSITES: LYOPHILIZATION AND SPARK PLASMA SINTERING	MICRO-CRACK DEVELOPMENT IN CARBON FIBER BATTERY IN CYCLIC CHARGE/DISCHARGE	EXPERIMENTAL AND ANALYTICAL STUDY OF COMPOSITE LATTICE STRUCTURE FOR FUTURE JAPANESE LAUNCHER	TIME AND TEMPERATURE INFLUENCE ON THE FAILURE OF TEXTILE COMPOSITES	INFLUENCE OF THE DIAMOND-CERAMIC COMPOSITE THERMAL CONDUCTIVITY ON CUTTING PROPERTIES
	Carlos Fidel Gutierrez-Gonzalez, Ramon Torrecillas, Sonia Lopez- esteban (Consejo Superior de Investigaciones Cienta-ficas (CSIC)), Said Agouram(Universidad Politecnica de Valencia)	Andrejs Pupurs(Lulea University of Technology), Janis Varna(Lulea University of Technology)	Keita Terashima(Japan Aerospace Exploration Agency), Toru Kamita(Japan Aerospace Exploration Agency), Gaku Kimura(), Toshiyuki Uzawa(), Takahira Aoki(The University of Tokyo), Tomohiro Yokozeki(The University of Tokyo)	Amine El mourid(Ecole Polytechnique de Montreal), Martin Lévesque(Ecole Polytechnique de Montreal), Rajamohan Ganesan(Concordia University)	Lucyna Renata Jaworska, Piotr Klimczyk, Marcin Henryk Rozmus (Institute of Advanced Manufacturing Technology), Wojciech Zebala (Cracow University of Technology), Pawel Rutkowski (AGH University of Science and Technology)
	Combining spray-freezing and lyophilization is a feasible technique for preparing high-quality ceramic/metal nanostructured powders that lead to compacts with excellent mechanical features.	Development of mechanical stresses and possible micro-crack initiation and propagation scenarios in carbon fiber battery are analyzed in this paper using analytical and FEM models.	Experimental and analytical approach for evaluation of composite lattice structure for launch vehicle's structure is described through manufacturing, tests and analysis of large scale demonstrator.	The aim of this study is to understand the influence of high temperature and aging on the failure of textile composites. The study is based on experimental data as well as analytical methods.	Diamond composite was obtained by HP-HT method. Ceramics bonding phase improved the graphitization and oxidation resistance but has influence on decreasing thermal conductivity.
15:50	SYNTHESIS OF METAL AND METAL OXIDE/CNTS HYBRID NANOPARTICLES AND THEIR REINFORCEMENTS IN POLYMERS	ADDRESSING ENGINEERING ISSUES FOR A COMPOSITE STRUCTURAL POWER DEMONSTRATOR	COMPOSITE PHASE CHANGE MATERIALS WITH ENHANCED THERMAL DIFFUSIVITY	MODELING OF MECHANICAL RESPONSE IN CFRP ANGLE-PLY LAMINATES	FRACTURE TOUGHNESS BEHAVIOR OF ALUMINA MATRIX COMPOSITES AT ELEVATED TEMPERATURE.
	Vijaya K Rangari(Tuskegee University)	Mayur Kishorbhai Mistry(Imperial College of Science), Anthony Kucernak(Imperial College of Science), Sang Nguyen(Imperial College of Science), Jesper Ankersen(Imperial College of Science), Emile Smith Greenhaleh(Imperial College of Science)	Adam Dominiak(Technical University of Warsaw), Jan Alexander Blaszczyk(Technical University of Warsaw)	Shinji Ogihara(Tokyo University of Science), Hayato Nakatani(Osaka City University)	Magdalena Szutkowska(Institute of Advanced Manufacturing Technology), Barbara Smuk(Institute of Advanced Manufacturing Technology), Marek Boniecki(Institute of Electronic Materials Technology)
	The as-prepared hybrid nanoparticles were further infused in to the nylon-6 or epoxy resin to produce hybrid nanoparticles based polymer nanocomposites for multifunctional applications	Efficient current collection in terms of mass and resistive loss on structural energy storage laminates and susceptibility of the laminates to finishing processes such as machining were investigated.	Carbon structures with high thermal conductivity may be used to enhance thermal conductivity of PCM. Measurements results indicates that thermal conductivity could raise at least <i>few</i> times.	The nonlinear mechanical response in CFRP (+45/-45)s angle- ply laminates is experimentally evaluated and analytically modeled by using a finite strain viscoplasticity model.	Evaluation of the elevated temperature influence on the fracture toughness for alumina matrix composites reinforced by means of TiC and Ti(C,N)in micro- and nanoscale.
16:10	CARBON NANOFIBERS WITH MULTI-CHANNELED SILICON COMPARTMENTS: FABRICATION AND ELECTROCHEMICAL PROPERTIES		EFFECT OF MANUFACTURING DEFECTS AND THEIR UNCERTAINTIES ON STRENGTH AND STABILITY OF STIFFENED PANELS	DESING OF TRANSVERSE BIAXIAL TENSILE TESTS ON CRUCIFORM SPECIMENS	
	Hosung Yang (Seoul National University), Byoung-sun Lee (Seoul National University), Woong-ryeol Yu (Seoul National University)		Frank F Abdi(AlphaSTAR Corporation), Jean-philippe Marouzé(Bombardier)	Federico París(Universidad de Sevilla), Alberto Barroso(Universidad de Sevilla), Elena Correa(Universidad de Sevilla), Maria Dolores Pérez(Universidad de Sevilla), David Vega(Universidad de Sevilla)	
	Multi-channel Si core/C shell nanofibers are fabricated by electrospinning for better electrochemical performance as a LIB anode due to more contact points between Si and C, and high buffering effect.		This paper examines the effect of composites manufacturing defects on the strength and stability of stiffened structural panels as well as their effect on coupons and flat panels.	Biaxial testing on cruciform specimens is studied. Manufacturing of a biaxial device and numerical design of cruciform specimens are presented. Experimental tension- tension tests are carried out.	
16:30			BREAK		

12:30	Room 522	Room 518ab	Room 520ad LUNCH	Room 710	Room 520c
13:30		PLENARY (Room 710) - Mic	chael Wisnom: "The challenge of predi	cting failure in composites".	Chair: François Trochu
	MECHANICAL PROPERTIES 2 Chair: Peter Hine	PROCESSING VII Chair: Mylene Deleglise, David Wilson	REPAIRS AND MACHINING Chairs: Helmi Attia, Chris Arvanitelis	METAL MATRIX COMPOSITES III Chair: Jason Lo	NON DESTRUCTIVE EVALUATION 3 Chairs: Nobuo Takeda, Patrick Peres
14:30	GRAPHENE BASED POLY(VINYL ALCOHOL) NANOCOMPOSITES: EFFECT OF HUMIDITY CONTENT	COMPARISON OF MECHANICAL PROPERTIES BETWEEN FRTP USING IN-SITU POLYMERIZABLE PA6 AND FRP USING FIRST CURABLE EPOXY RESIN	HEALING CARBON FIBER/POLYMER COMPOSITES BY RESISTIVE HEATING	CHALLENGES OF APPLYING COMPOSITE MATERIALS TO THE NEXT GENERATION OF AEROENGINES	RESISTIVE HEATING STRUCTURAL DAMAGE DETECTION IN NANOCOMPOSITES
	Alessandro Pegoretti(University of Trento)	Kazuhiro Sakata(Nihon University), Goich Ben(Nihon University), Hirofumi Nishida()	Lifeng Hao(Harbin Institute of Technology), Chengqin Dai(Harbin Institute of Technology), Hongtao Zhang(Harbin Institute of Technology), Rongguo Wang(Harbin Institute of Technology), Sichuan Li(), Xianglong Huang(), Fanjun Meng(), Zaiven Lin()	Dale Richard Carlson (GE)	Roberto Guzman de villoria(IMDEA Materials), Vanesa Martinez(IMDEA Materials)
	PVOH nanocomposites filled with various amounts of both graphene oxide (G0) and chemically reduced GO were prepared. The effects of humidity content on the thermomechanical behaviour were analyzed.	The mechanical properties of the HFRTP using the in-situ polymeirable polymide 6 were investigated, and their results were compared with those of the HFRP using first curable epoxy resin.	This paper focuses on the healing earbon fiber composites via resistive heating. The healing efficiency is studied by microdroplet measurements.	Historically materials used in propulsion systems have been metallic in nature and most of these metallic materials need performance robbing	A novel non destructive evaluation technique based on carbon nanofibers is implemented. Joule effect resistive heating is used to detect and localize the damage of a structure.
14:50	EFFECTS OF THE CURE PRESSURE ON INTERLAMINAR SHEAR STRENGTH OF CFRP/STEEL HYBRID LAMINATE CURED BY HOT PRESSING FOR A SHORT TIME	CURE MONITORING OF CFRP: ELECTRICAL IMPEDANCE ANALYSIS	EXPERIMENTAL INVESTIGATION OF SCARF JOINTS WITH MISMATCHED ADHERENDS	cooling flows to survive in the hottest areas of an engine.	PLY WAVINESS DETECTION AND MESH GENERATION FOR COMPOSITES BASED ON X-RAY COMPUTED TOMOGRAPHY
	Wen-xue Wang(Kyushu University), Terutake Matsubara(Kyushu University), Yoshihiro Takao(Kumamoto Institute of Technology), Kenzo Yasuda(NHK SPRING Co. LTD.), Ryousuke Hayashi()	Philippe Marguerès(Institut Clément Ader), Philippe A Olivier(Institut Clément Ader), Thierry Camps(), Sonia Sassi(Institut Clément Ader), Mahamadou Mounkaila()	Jun yi Goh(Royal Melbourne Institute of Technology), Chun H Wang(RMIT University), Adrian Orifici(Royal Melbourne Institute of Technology)		Yuri G Nikishkov(University of Texas at Arlington), Gennadiy Nikishkov(University of Aizu), Andrew Makeev(University of Texas at Arlington)
	n this paper, The effects of the cure pressure and thermal shock on the interlaminar shear strength of the CFRP/steel hybrid laminates cured by hot pressing for a short time are investigated.	This study presents the use of electrical impedance analysis for in situ monitoring of the curing of CFRP using sensors developed for the purpose.	This paper investigates the effect of flaws on the strength of scarf joints with mismatched adherends. Mismatched adherends is a unique problem in composite repairs that needs to be resolved.		Automated generation of quadrilateral mesh based on X-Ray Computed Micro-Tomography of unidirectional composite specimens with ply wariness is validated by comparison of structural analysis and tests
15:10	MECHANICAL CHARACTERISTIC AND STRENGTH PREDICTION OF FILLED HOLE COMPOSITE LAMINATE UNDER COMPRESSION LOADING	REINFORCEMENT OF PARTIALLY CURED AEROSPACE STRUCTURES WITH B-STAGED PATCHES	DETECTION OF CONTAMINANTS ON CFRP SURFACES - A NECESSITY FOR COMPOSITE REPAIR?	FABRICATION OF AL-TIB2-B4C COMPOSITES BY QUICK SPONTANEOUS INFILTRATION PROCESS	A STUDY ON MULTI-AXIAL FORCE MEASUREMENT OF POLYMER SKINS USING FBG SENSOR
	Xiao Jing Zhang(Shanghai Jiaotong University), Zhuyu Jin(Shanghai Jiao Tong University), Cheng Chen(Shanghai Jiao Tong University), Hai Wang(Shanghai Jiao Tong University)	Julia Studer(Fachhochschule Nordwestschweiz), Kunal Masania(Fachhochschule Nordwestschweiz), Clemens Dransfeld(University of Applied Sciences and Arts Northwestern Switzerland), Nicolas Eguemann(Cross Composite AG)	Georg christian Wachinger(EADS Innovation Works)	Jung-moo Lee(Korea Institute of Materials Science), Jingjing Zhang(Shandong University), Young-hee Cho(Korea Institute of Materials Science), Su-hyeon Kim(Korea Institute of Materials Science), Huashun Yu(Shandong University)	Oh min Kwon(Andong National University), Hui yun Hwang(Andong National University), Sang kyun Hwang(Andong National University), Hyun ju Oh(Chonbuk National University), Seong su Kim(Chonbuk National University)
	A predictive method was proposed to estimate FHC strength of laminates based on load distribution between plate and filled bolt.	A B-stage curing method has been developed to reinforce fastener areas in an aircraft floor beam. The developed cure kinetic models, and effect of co curing on the bearing strength will be presented.	The paper will focus on research results determined with Infrared-Spectroscopy. Laser-Fluorescence and mainly with Electronic Noses for the contamination detection on CFRP surfaces.	A sound Al-TiB2-B4C composites having excellent properties were produced by quick spontaneous infiltration process in a few minutes in atmosphere.	In this study, multi-axial force detection in polymer structures was investigated using FBG sensor for developing a new tactile sensing system experimentally
15:30	THE EFFECT OF GAS TEXTURING TECHNOLOGY ON THE TENSILE BEHAVIOUR OF UNIDIRECTIONAL (UD) CARBON FIBRE (CF) REINFORCED POLYAMIDE-12(PA-12) COMPOSITE	EFFECT OF FIBER VOLUME FRACTION AND PROCESS ORIENTATION ON MODULES OF POLYETHYLENE GLASS FIBER COMPOSITE FIBER	ON THE EFFECT OF MQL PARAMETERS ON MACHINING QUALITY OF CFRP	HIGH TEMPERATURE TENSILE PROPERTIES OF IN SITU TIBW/TI60 COMPOSITES WITH NOVEL NETWORK MICROSTRUCTURE	A STUDY ON THE TACTILE SENSING SYSTEM USING PIEZOELECTRIC FIBER
	Hele Diao(Imperial College of Science), Paul Robinson(Imperial College of Science), Michael R Wisnom(University of Bristol), Alexander Bismarck(Imperial College of Science)	Amir Khorsand(University of Manitoba), Jayaraman Raghvan(University of Manitoba)	Helmi Attia(National Research Council Canada)	Lujun Huang(Harbin Institute of Technology), Xudong Rong(Harbin Institute of Technology), Lin Geng(Harbin Institute of Technology), Fuyao Yang(Harbin Institute of Technology)	Sang kyun Hwang(Andong National University), Hui yun Hwang(Andong National University), Oh min Kwon(Andong National University), Seong su Kim(Chonbuk National University)
	A gas-texturing device was used to combine CF tows and introduced a small misalignment into CF/PA-12. The composite fails in steps rather than in a catastrophic fracture when subjected to tension.	In this study effect fiber volume fraction on orientation of HDPE/Fiber glass manufactured by extrusion is studied.Volume fraction is varied from 10%-%50.	This paper investigates the effect of Minimum Quantity Lubrication (MQL) parameters on the quality of the machined surface in routing of CFRP laminates; surface roughness and geometrical accuracy.	In situ TIB whiskers reinforced Tifo (TIBw/Ti6o) composites with a tailoring network microstructure were successfully designed and fabricated by reaction hot pressing.	The continuous and discontinuous PVDF strips were considered and experiments were conducted with respect to the magnitude of the load, distance between loading and sensing positions.
15:50	MECHANICAL BEHAVIOR OF THIN TITANIUM FILMS / CFRP HYBRID LAMINATES CONTAINING TRANSITION REGION	CHARACTERIZING VISCOELASTIC PROPERTIES OF CURING EPOXY FROM PRE-GELATION TO FULL CURE	EXPERIMENTAL OPTIMIZATION OF ORBITAL DRILLING OF WOVEN CARBON FIBER REINFORCED EPOXY LAMINATES	A CFD-MODEL FOR PREDICTION OF UNINTENDED POROSITIES IN METAL MATRIX COMPOSITES	GENERELIZED COMPLIANCE, A NEW TECHNIQUE FOR PROGRESSIVE DAMAGE ANALYSIS IN COMPOSITE MATERIALS
	Yuhei Nekoshima(Tokyo University of Science), Daiki Mitsumune(Tokyo University of Science), Hayato Nakatani(Osaka City University), Shinji Ogihara(Tokyo University of Science)	Ryan J Thorpe(Convergent Manufacturing Technologies Inc.), Anoush Poursartip(University of British Columbia)	Helmi Attia(National Research Council Canada), Ahmad Sadek(McGill University)	Shizhao Li(Technical University of Denmark), Jon Spangenberg(Technical University of Denmark), Jesper Henri Hattel(Technical University of Denmark)	Kenneth L Reifsnider(University of South Carolina - Columbia), Md Rassel Raihan(University of South Carolina - Columbia)
	The effects of the transition region with various stacking sequence on mechanical behavior of thin titanium films/CFRP hybrid laminates are evaluated by tensile tests and 4 point bending tests.	A generalized Maxwell model was fit to viscosity and modulus data of a thermoset epoxy. Rheometer and DMTA tests generated the data set spanning all cure and temperature ranges typical to processing.	The objective of this research work is to investigate the effect of the OD process key parameters with respect to the produced hole quality attributes and cutting forces and temperatures.	A numerical model that enables for the simulation of the flow through the porous corridors of the preform is proposed and shows the capability of predicting unintended porosities in MMCs.	We present a generalized compliance method based on the dielectric nature of micro-cracking for the analysis of the specific nature of the progressive damage of composite materials.
16:10	IMPROVED COMPRESSION STRENGTH OF CARBON/GLASS/EPOXY HYBRID COMPOSITES	CURE MONITORING OF 3D ANGLE INTERLOCK WOVEN CARBON FIBRE COMPOSITES	MATERIAL REMOVAL MECHANISM OF CARBON/EPOXY COMPOSITES IN SINGLE DIAMOND GRAIN MACHINING	ENCHANCEMENT OF MECHANICAL PROPERTIES OF CAST NANO CABONS REINFORCED A356 ALUMINIUM MATRIX COMPOSITES	STRUCTURAL METHODS FOR COMPOSITES IN THE PRESENCE OF POROSITY/VOIDS
	Christen Malte Markussen(Technical University of Denmark)	AT. McIlhagger, J. Broderick, E. Archer (University of Ulster)	Helmi Attia(National Research Council Canada), Ireen Sultana(McGill University), Zhongde Shi(National Research Council of Canada NRC), Vincent Thomson(McGill University)	Sang bok Lee(Korea Institute of Materials Science)	Guillaume Seon(University of Texas at Arlington), Yuri G Nikishkov(University of Texas at Arlington), Andrew Makeev(University of Texas at Arlington)
	A series of new test results demonstrating higher compression strengths of carbon/glass/epoxy hybrid composites. Laminates are made using filament winding and vacuum infusion.	This study presents results of embeded fibre optic sensors for the purpose of monitoring strain during the cure cycle/resin infusion of a 3D woven composite.	The material removal mechanism of CFRP by a single diamond grain, using a geometrically well-defined diamond grain is investigated. FE modeling was also conducted to reveal the failure modes.	CNFs and SiCp reinforced A356 aluminium composites were successfully fabricated by unique casting process. Their mechanical properties were improved by uniform distribution of CNFs and SiCp.	Porosity/void locations and shapes obtained by X-Ray Computed Tomography are essential for accurate predictions of strength and fatigue life by structural analysis models of curved- beam tests
16:30			BREAK		

	Room 525	Room 520f	Room 520be		Room 516ab
12:30			LUNCH		
13.30		PLENARY (Room 710) -	Michael Wisnom: "The challenge of pr	redictin	g failure in composites". Chair: François Trochu
	IMPACT & DYNAMIC RESPONSES 7 Chairs: Reza Vaziri, Christophe Bois	INTERFACE 6 Chair: TBD	THERMOPLASTIC COMPOSITES 3 Chairs: Irene Fernandez Villegas, Ali Yousefpour		NANOCOMPOSITES II - POSTER Chairs: Tri-Dung Ngo, Cagri Ayranci
14:30	CURE MULTIPHYSIC COUPLINGS EFFECTS ON THE DYNAMIC BEHAVIOUR OF A THICK EPOXY	CURING REACTION OF BENZOXAIZNE CONTAINING CYANO AND PROPARGYL GROUPS	COMPRESSION MOULDING OF COMPLEX PARTS FOR THE AEROSPACE WITH DISCONTINUOUS NOVEL AND RECYCLED THERMOPLASTIC COMPOSITE MATERIALS	13:30	SOL GEL MODIFIED DERIVED CAO-MGO-SIO2 CERAMIC GLASS SYSTEM PREPARATION AND IN VITRO CHARACTERIZATION
	Christian Jochum(École Nationale Supérieure de Techniques Avancés, Bretagne)	Qiao Long Yuan(East China University of Science and Technology), Lei Du(East China University of Science and Technology), Farong Huang(East China University of Science and Technology)	Nicolas Eguemann(Cross Composite AG)	13:34	Chicko Yamagata, Mayara Rafaela Soares Paiva, Olga Zazuko Higa, Andrea Cecilia Dorion Rodas, Antonio Carlos Franco STRUCTURE-PROCESS-PROPERTY RELATIONSHIP OF EXFOLIATED GRAPHITE NANOPLATELET / POLYLACTIC ACID COMPOSITES THIN FILMS
	This paper presents simulation results for a cylindrical epoxy block, exposed to laser induced shock waves, by taken into account internal stresses and gradients of properties induced by the curing.	The self-catalysis thermal polymerization of the propargyl group in the benzoxazine with cyano and propargyl groups is easier than that of the cyano group.	This development concerns the production of complex parts capable of withstanding concentrated loads with up to 84% weight saving compared to metallic discontinuous thermoplastic composite materials.	13:38 13:42	Erm Sumvan, Nyriaxi Kalanzadou, Ben Wang EFFECT OF CARBON NANOFIBERS ON COMPRESSION PROPERTIES OF POLYESTER Yuanxin Zhou, Shaik Zainuddin, Shaik Jeelani CURRENT-VOLTAGE CHARACTERISTICS OF NANO-PLATELET BASED CONDUCTIVE NANO-COMPOSITES
14:50	STUDY ON PREDICTION OF PENETRATTION ENERGY FOR CA/EP COMPOSITE LAMINATES SUBJECTED TO HIGH- VELOCITY IMPACT USING QUASI-STATIC PERFORATION	CHARACTERIZATION OF SHORT GLASS-FIBRE REINFORCED POLYPROPYLENE COMPOSITES IN TENSION AND COMPRESSION	CHARACTERIZATION OF STOCHASTIC HONEYCOMB SANDWICH FAILURE	13:46	Amirhossein Biabangard oskouyi, Uttandaraman Sundararaj, Pierre Mertiny UREAURETHANES WITH ADDITION OF BOEHMITE
	EQUATION AND KINECTIC ENERGY MODEL Hyun-jun Cho(Chungnam National University), Seokje Lee(Chungnam National University), In-gul Kim(Chungnam National University), Kyeongsik Woo(Chungbuk National University)	Michael Jerabek(Borealis Polyolefine GmbH), Simon Gastl(Borealis Polyolefine GmbH), Anna Maria Hartl(Johannes Kepler University Linz), Martin Reiter(Johannes Kepler University Linz)	Megan Hostetter(University of Toronto), Brent Cordner(OCAD University), Glenn D Hibbard(University of Toronto)	13:50	Kamila Pietzak, Joanna Ryszkowska EFFECTS OF COUPLING AGENTS AND SURFACE TREATED CARBON NANOTUBES IN PET REGRANULATES DERIVED FROM BOTTLE WASTES
	The high velocity impact behavior through quasi-static perforation equation and kinetic energy model is examined. The	The behaviour of short glass fibre reinforced polypropylene composites was characterized in uniaxial tension and	Stochastic honeycombs are a new type of sandwich core material that are simple to make and have comparable mechanical expanding the commercial backgrounds	13:54	Csilla Varga ON THE INTERFACE MODIFICATION AND MICROSTRUCTURE CONTROL OF REINFORCING PARTICLES IN AGSNO2 ECM
	test conditions.	orientations.		13:58	Lawson Chen, Xiaotong Chen, Weili Liu A STUDY ON THERMAL SHOCK RESPONSE OF AL-AL2O3 MICRO- AND NANOCOMPOSITES
15:10	IMPACT BEHAVIOR OF A SIMPLE MULTIFUNCTIONAL PLATE STRUCTURE	EFFECT OF AU-ION IRRADIATION ON SILICON CARBIDE COMPOSITES	INFLUENCE OF TEATILE FARAMETERS AND LAMINATE BUILD-UP ON SURFACE QUALITY OF THERMOPLASTIC FIBER-REINFORCED COMPOSITES	14:02	KIUISIDU DASD, BAIKIM CHADITA KAY EFFECT OF CARBON NANOTUBES ADDITION ON THE PROPERTIES OF FLEXIBLE POLYURETHANE FOAMS
	Teo Mudric, Ugo Galvanetto, Alessandro Francesconi, Cinzia Giacomuzzo, Mirco Zaccariotto, Antonio Mattia Grande, Luca Di landro (Polytechnic Institute of Milan)	Nihed Chaâbane, Marion Le flem, Thierry Vandenberghe, Stéphane Urvoy, Paul Dumas, Yves Serruys (Commisariat a lenergie atomique et aux energies alternatives CEA)	Klaus Hildebrandt(Institut fuer Verbundwerkstoffe GmbH), Peter Mitschang(Institut fuer Verbundwerkstoffe GmbH), Felix Schulte-hubbert(Institut fuer Verbundwerkstoffe GmbH)	14:06	Anna Bryskiewicz, Joanna Ryszkowska DEVELOPMENT STUDY OF LIGHTWEIGHT STRUCTURAL MATERIALS USING UD CARBON NANOTUBE SHEET
	A multifunctional panel able to act as a self-repairing structure, is investigated numerically and experimentally under impact. It consists of two layers: a ionomer plate bonded to a CFRP laminate.	Irradiation-induced changes of three kinds of SiCff/SiC composites with TS, TSA3 and HNS fibers were measured after Au-ion irradiation at 0.05 and 1 dpa at RT and 800 °C.	The paper is about surface development during variothermic thermoforming of thermoplastic FRPC. It comprises the influence of textile and polymeric parameters on waviness.		Hirokazu Nakayama, Ken Goto, Tran Huu Nam, Satoru Yoneyama, Shuichi Arikawa, Kimiyoshi Naito, Yoshinobu
15:30	TESTING OF SANDWICH STRUCTURES WITH CFRP SKINS IN EDGEWISE COMPRESSION	PIEZO-RESISTIVE BEHVIOUR OF MULTIFUNCTIONAL CNT REINFORCED INTERPHASES IN GF/PP COMPOSITES DURING THERMAL-MECHANICAL LOADING	IMPACT OF THE MANUFACTURING PROCESS OF LOCALLY LOAD-RELATED REINFORCED COMPOSITES ON THE INTERFACE BEHAVIOR		
	Dirk Lukaszewicz(BMW Group), Sindy Engel(Technische Universitat Bergakademie Freiberg), Christian Boegle(BMW Group)	Niclas Wiegand(Leibniz Institute of Polymer Research Dresden), Edith Maeder(Leibniz Institute of Polymer Research Dresden)	Rene Holschuh(Institut fuer Verbundwerkstoffe GmbH), Jovana Dzalto(Institut fuer Verbundwerkstoffe GmbH), Peter Mitschang(Institut fuer Verbundwerkstoffe GmbH)		
	A novel test rig for edgewise compression of sandwich structures and flat plates was developed. A large number of different sandwich configurations was then tested in edgewise compression.	The objective of this study is to investigate the influence of the temperature onto DC conductivity of CNT reinforced glass fibre interphases.	The aim of the study is the investigation of the impact of the manufacturing process of locally load-related reinforced composites on the interface behavior.		
15:50	FAILURE OF SINGLY CURVED SANDWICH PANELS SUBJECTED TO BLAST LOADING	SURFACE TREATMENT OF CARBON FIBERS BY ULTRAVIOLET LIGHT+OZONE: ITS EFFECT ON FIBER SURFACE AREA AND TOPOGRAPHY	DEVELOPMENT OF AN ON-LINE ANALYSIS METHOD FOR THE THERMOPLASTIC IMPREGNATION PROCESS		
	Chris Von klemperer(University of Cape Town), Genevieve Langdon(University of Cape Town), Gerald N Nurick(University of Cape Town), Gregory Sinclair(University of Cape Town)	Michael Rich(Michigan State University), Lawrence T Drzal(Michigan State University), Edward K Drown(Michigan State University), Per Askeland(Michigan State University)	Marcel Christmann(Institut fuer Verbundwerkstoffe GmbH), Peter Mitschang(Institut fuer Verbundwerkstoffe GmbH)		
	Singly curved glass fibre epoxy sandwich panels with PVC foam cores were manufactured using a combination of core thermoforming and VARTM and then subjected to blast tests using PE4 explosive.	The effect of UVO treatment on fiber surface oxygen concentration, fiber surface area, fiber topography and fiber- matrix adhesion will be discussed.	The paper will give information about the development of an special tool for the observation of the thermoplastic impregnation process.		
16:10	BIRD IMPACT STUDY OF A PRELOADED COMPOSITE WIND TURBINE BLADE	INTERFACIAL EVALUATION OF CARBON FIBER/CNT- PHENOLIC COMPOSITES BY DUAL MATRIX COMPOSITES	MECHANICAL PROPERTIES OF RANDOMLY ORIENTED STRAND (ROS) THERMOPLASTIC COMPOSITES		
	Norimichi Nanami(Texas A&M University), Ozden O Ochoa(Texas A&M University)	Joung-man Park(Gyeongsang National University), Zuo jia Wang(Gyeongsang National University), Dong-jun Kwon(Gyeongsang National University), Ga-young Gu(Gyeongsang National University), Lawrence K. Devries(University of Ulah)	Marina Selezneva(McGill University), Kouwonou Kodjo Dodji(Ecole de Technologie Superieure), Larry Lessard(McGill University), Pascal Hubert(McGill University)		
	We present computational damage assessment of a bird (soft body) impact on a composite wind turbine blade with and without pre-loads.	Atmospheric pressure plasma treatment on carbon nanotube (CNT) surfaces was performed to modify reinforcement effect and interfacial adhesion of carbon fiber reinforced CNT- phenolic composites.	Performance of ROS composites was studied using mechanical testing coupled with digital image correlation. Results will help to relate the heterogeneous nature of this material to its behavior.		
16:30		1	BREAK		

16.00	Room 515	Room 519a	Room 514	Room 524ab	Room 524c
10.30	NANOCOMPOSITES V Chairs: Carlos Alberto Cimini Jr., Jang-Kyo Kim	ENERGY DEVICES 2 Chairs: Emile Smith Greenhalgh, Leif Erik Asp	APPLICATIONS 8 Chairs: Dirk Lukaszewicz, Leroy Michel	FRACTURE AND DAMAGE 16 Chairs: Kenneth L. Reifsnider, Michael John Hinton	FRACTURE AND DAMAGE 18 Chairs: Gabriel Laplante, Paul A. Smith
16:50	MICROSCOPIC PROPERTIES AND NUMERICAL SIMULATION OF ALIGNED CNT SHEET COMPOSITES	MATCHING MATRIX AND FILLER DIELECTRIC CONSTANTS TO INCREASE DIELECTRIC BREAKDOWN STRENGTH	BIOMASS BASED GREEN COMPOSITES: FABRICATION AND PERFORMANCE EVALUATION	FRACTURE MECHANICS OF COMPOSITE PLIES ON MICROSCALE	DAMAGE EVOLUTION LAW IN THE FRAMEWORK OF CONTINUUM DAMAGE MECHANICS FOR UD COMPOSITES
	Tsuda Terumasa(The University of Tokyo)	Josć Eliseo De León(Iowa State University of Science and Technology), Daniel J O'brien(US Army Research Laboratory), Michael Richard Kessler(Iowa State University of Science and Technology)	Vidhya Nagarajan(University of Guelph), Amar K Mohanty(University of Guelph), Manjusri Misra(University of Guelph)	Christian Marotzke(BAM-Federal Institute for Materials Research & Testing), Titus Feldmann(BAM-Federal Institute for Materials Research & Testing)	Shuguang Li(University of Nottingham), Qing Pan(University of Nottingham), Tian-hong Yu(University of Nottingham)
	The nanoscopic damage behavior of CNT/epoxy composites was observed in detail using TEM. Numerical simulationswere carried out to elucidate the fracture mechanisms.	Dielectric breakdown strength increases by matching dielectric constant values at the composite interface. Cyanate ester resin is modified with BaTiO3 nano-powder to match E-glass dielectric constant.	Perennial grass based green composites were developed in this study. Effect of incorporation of fiber at 30 wt% and the effect of adding a compatibilizer was investigated.	The debonding of individual fibers inside a composite ply and the kinking of interface cracks into the matrix is analysed by calculating the energy release rate for different fiber volume fractions.	This is a continuation of the work on CMD representation as presented in a recent paper by the authors into damage evolution by following the same rational approach as previously adopted.
17:10	SELF-DISPERSION OF CARBON NANOTUBES IN THERMOPLAST POLYMER	MANUFACTURING OF A MULTIFUNCTIONAL COMPOSITE PART FOR USE IN AUTOMOTIVE APPLICATIONS	ARTIFICIAL NEURAL NETWORKS MODELING OF THE VISCOELASTIC PROPERTIES OF VAPOR-GROWN CARBON NANOFIBER/VINYL ESTER NANOCOMPOSITES	EFFECT OF VOIDS ON INITIAL FAILURE OF CFRP LAMINATES	DAMAGE TOLERANCE OF STIFFENED COMPOSITE STRUCTURES
	Ekaterina Pavlenko, Pascal Puech, Wolfgang Bacsa (Universite Paul Sabatier (Toulouse III)), Victoria Tishkova, Philippe Salles (Centre National de la recherche scientifique CNRS)	Tony Carlson(Swerea SICOMP), Leif Erik Asp(Swerea SICOMP), Viktor Ekermo(), Per-ivar Sellergren()	Osama Y Abuomar(Mississippi State University), Sasan Nouranian(Mississippi State University), Roger King(Mississippi State University)	Shigeki Aratama(Kawasaki Heavy Industries Ltd.), Yusuke Tsumura(Kyoto University), Masaaki Nishikawa(Kyoto University), Masaki Hojo(Kyoto University)	Joanne Emma Davies(University of Southampton), Adam J. Sobey(University of Southampton), James I.r. Blake(University of Southampton), Ajit Shenoi(University of Southampton)
	We use Raman spectroscopy and transmission electron microscopy to monitor the self-dispersion of multiwall and double wall carbon nanotubes in surface layer in PEEK.	The component manufactured was a plenum cover for a Volvo S8o start/stop. The component adds torsion stiffness to the car while replacing the start/stop battery and plenum cover.	ANN was trained using the re-substitution method and the three fold cross validation technique to predict the responses of VGCNF/VE anocomposites when the design factors were applied as ANN's inputs.	Effects of voids on transverse crack initiation were investigated by three point bending experiments in SEM, and microscopic strain measurement based on the image analysis of SEM pictures.	This paper presents an analysis investigating the effect of damage parameters on the residual capability of top-hat multi- stiffened composite structures.
17:30	STIFF AND DUCTILE NANOCOMPOSITES OF EPOXY REINFORCED WITH CELLULOSE NANOFIBRILS	MECHANICAL AND MICROSTRUCTURAL CHARACTERISATION OF MULTIFUNCTIONAL STRUCTURAL POWER COMPOSITES	DESIGN AND MANUFACTURE OF ANISOTROPIC HOLLOW BEAM USING THERMOPLASTIC COMPOSITES	OPTIMISATION OF CARBON-FIBER COMPOSITE SHELLS FOR TYPE IV PRESSURE VESSELS	NUMERICAL ANALYSIS ON LOW-VELOCITY IMPACT DAMAGE OF LAMINATED COMPOSITES BY COMBINING CONTINUUM DAMAGE MECHANICS WITH COHESIVE ZONE MODEL
	Mohd Farhan Ansari(Royal Institute of Technology), Sylvain Galland(Royal Institute of Technology), Patrik Sven Fernberg(Swerea SICOMP), Lars A. Berglund(Royal Institute of Technology)	E. Smith Greenhalgh, J. Ankersen, A. Bismarck, A. Kucernak, S. Nguyen, J. Hg Steinke, N. Shirshova (Imperial College of Science), M. Wienrich, G. Kalinka (BAM Federal Institute for Materials Research & Testing), L. Erik Asp., S. Nilsson (Swerea SICOMP), Q. P.v. Fontana (Cytec), M. Houlle	Tsuyoshi Matsuo(The University of Tokyo), Kosuke Takayama(Tokyo University), Satoshi Nagoh(Toyobo Co., Ltd.), Kohei Kiriyama(), Jun Takahashi(The University of Tokyo), Takahiro Hayashi()	Clémence Devilliers(Air Liquide - CRCD), Anthony R. Bunsell, Alain Thionnet, Heng-yi Chou, Sébastien Joannès(Ecole Nationale Superieure des Mines de Paris)	Xiaochen Sun(Shandong University), Peng Qu(Shandong University), Yunii Guo(Shandong University), Yuxi Jia(Shandong University)
	stanto composites of epoxy remote with nano instanted cellulose, prepared via impregnation of nanofibril network, showed large strain to failure coupled with high stiffness and strength.	An over view of including a properties of structures of structure a power materials from the STORAGE programme is given, and this provides an insight into the microstructures of these multifunctional materials.	This paper unscusses about a potential of anisotropic design with hybrid composition of uni-directional sheet (UD-sheet) and chopped tapes CFRTP (CTT) sheet.	The infinite Latture processes controlling unfinite includes of CFRP filament wound composites have been investigated experimentally and by multi-scale modelling.	In this paper, a mine even in the tool is proposed to study the damage behavior of Hexply AS4/8552 laminated composites under low-velocity impact.
17:50	MICROSTRUCTURE AND MECHANICAL PROPERTIES OF ISOTACTIC POLYPROPYLENE REINFORCED WITH TIO2 NANOPARTICLES	MULTIFUNCTIONAL STRUCTURAL POWER COMPOSITES BASED ON CARBON AEROGEL MODIFIED HIGH PERFORMANCE CARBON FIBRE FARDICS	DESIGN, MANUFACTURING AND TESTING OF A CYLINDRICAL DRUM-SHELL USING A SANDWICH STRUCTURE	THE MUTUAL EFFECTS OF SHEAR AND TRANSVERSE DAMAGE IN POLYMERIC COMPOSITES	DETERMINATION OF INTERFACIAL SHEAR STRENGTH IN EPOXY/GLASS COMPOSITES BY MULTI-FIBER FRAGMENTATION TEST (MFFT)
	Ahmad Zohre vand(Ecole Polytechnique de Montreal), Abdellah Ajji(Ecole Polytechnique de Montreal), Frej Mighri(Laval University)	Hui Qian, Anthony Kucernak, Emile Smith Greenhalgh, Alexander Bismarck, Milo S p Shaffer (Imperial College of Science)	Ajith Damodaran(Anna University), Larry Lessard(McGill University), Suresh babu Annamalai(Anna University), Gary Scavone(McGill University), Hossein Mansour(McGill University)	Lloyd Smith(Washington State University), Mohammedmahdi Salavatian(Washington State University)	Edward David Mccarthy, Jae hyun Kim, Nathanael Alan Heckert, Stefan D. Leigh, Gale A Holmes, Jeffrey W. Gilman (National Institute of Standards and Technology(NIST))
	The effects of adding TiO2 nanoparticles on crystalline microstructure and mechanical properties of nanocomposites based on isotactic polypropylene were investigated.	A new hierarchical composite structure has been created by embedding structural carbon fabrics into nanostructured carbon aerogels for multifunctional structural power applications.	A carbon fiber reinforced sandwich structure suitable for replacing wood in the drum-shells was developed. An Indian drum was constructed and sound characteristics were compared with traditional drum.	A CDM model proposed based on a coupon that was designed to study the evolution of shear and transverse damage.	In this paper we discuss the multi fiber fragmentation test (MFFT), which is applied to epoxy / E-glass composites. Results indicate that fiber break distribution is uniform.
18:10	OPTIMIZING THE PRODUCTION OF NANOCOMPOSITES VIA EXTRUSION TECHNIQUES USING NANOPARTICLE CONTAINING DISPERSIONS AND THEIR DISPERSION QUALITY		MATERIALS FOR LIGHTWEIGHT RADIATION SHIELD FOR CANADIAN POLAR COMMUNICATIONS AND WEATHER (PCW) SATELLITE MISSION	USING SPIRAL NOTCH TORSION TEST TO EVALUATE FRACTURE TOUGHNESS OF FIBER-REINFORCED POLYMERIC COMPOSITES	
	- Trene Hassinger(Institut fuer Verbundwerkstoffe GmbH), Thomas Burkhart(Institut fuer Verbundwerkstoffe GmbH), Rolf Walter(Institut fuer Verbundwerkstoffe GmbH)		Adebayo Emmanuel(University of Manitoba), Raghavan Jayaraman(University of Manitoba), Philip Andrew Ferguson(Magellan Aero), Raymond Harris(Magellan Aero)	Jy-an John Wang(Oak Ridge National Laboratory), Ting Tan(University of Vermont), Hao Jiang(Oak Ridge National Laboratory)	
	Nanoparticles are applied in polymers in order to increase stiffness and toughness. To prevent agglomeration, nanoparticle dispersions using appropriate extrusion technology are incorporated.		Using simulation, we have shown that polymer-based shielding materials in a Molniya orbit give the least shield weight which meets the radiation dose requirement for PCW satellite mission.	This paper studied the fracture behavior of fiber-reinforced composites using the spiral notch torsion test. The critical loads upon failure were studied at different loading rates.	
18:00		1	COCKTAILS (Cash Bar)	1	1
19:00			BANQUET		
22:00			End		

	Room 522	Room 518ab	Room 520ad	Room 519b	Room 520c
16:30	MECHANICAL PROPERTIES 3 Chair: Navid Zobeiry	PROCESSING VIII Chair: Mylene Deleglise, David Wilson	BREAN EXPERIMENTAL TECHNIQUES 1 Chairs: Isabelle Paris, Adam John Sawicki	METAL MATRIX COMPOSITES IV Chair: Jason Lo	MICROSTRUCTURES Chairs: TBD
16:50	A NEW REGULARIZED VIRTUAL FIELDS METHOD FOR COMPOSITE MATERIAL PARAMETERS IDENTIFICATION	HEAT RESISTANCE PROPERTIES OF FRTP COMPOSED OF IN-SITU PORIMERIZATION PA6 AND CF AND GF FABRICS	AN EXPERIMENTAL AND FINITE ELEMENT STUDY OF THE LONGITUDINAL BENDING BEHAVIOR OF T- JOINTS IN VEHICLE STRUCTURES	MICROSTRUCTURE AND WERE RESISTANCE IN HYBRID ALUMINIUM COMPOSITES WITH SIC WHISKER AND CARBON NANOTUBES	PREDICTION OF FIBRE ORIENTATION IN SHORT GLASS FIBRE REINFORCED COMPOSITE INJECTION MOULDING
	Behzad Rahmani(Ecole Polytechnique de Montreal), Martin Lévesque(Ecole Polytechnique de Montreal), Isabelle Villemure(Ecole Polytechnique de Montreal)	Akiko Hirabayashi(Nihon University), Goich Ben(Nihon University), Hikaru Ozeki()	Ermias Gebrekidan Koricho(Polytechnic Institute of Turin), Giovanni Belingardi(Polytechnic Institute of Turin)	Xuexi Zhang(Harbin Institute of Technology), Aibin Li(Harbin Institute of Technology), Lin Geng(Harbin Institute of Technology)	Fin Caton-rose(University of Bradford), Peter Hine(University of Leeds), Bushra Parveen(University of Bradford)
	Mechanical constraints, consisting of a homogenization model, are used in an optimization problem in order to regularize the Virtual Fields Method and obtain more accurate mechanical properties	The in-situ polymerization PA6 was the one of the most suitable matrix of the FRTP. In this study, heat resistance properties of the FRTP were examined.	In this work behaviour of carbon/epoxy composite T-joint located on B-pillar of a vehicle body structure, subjected to bending loading, was investigated using experimental and numerical methods.	Hybrid 2024Al composites reinforced with SiCw and CNTs were prepared by pressure infiltration. The homogeneous distribution of CNTs and excellent mechanical and wear properties were demonstrated.	Within this paper we compare predictions of short glass fibre orientation developed during injection moulding based on the RSC, Folgar-Tucker and modified Folgar-Tucker models
17:10	A STUDY ON THE DEVELOPMENT OF PREDICTION EQUATION OF PIEZOELECTRIC CHARATERISTICS FOR GLASS FIBER EPOXY COMPOSITES	HOLLOW STRUCTUAL PRODUCT OF CONTINUOUS FIBER REINFORCED THERMOPLASTIC COMPOSITES BY HIGH CYCLE MOLDING	MEASUREMENT OF THERMAL DEFOEMATION IN CFRP LAMINATE AT DIFFERENT SCALES	KINETICS OF PHASE TRANSFORMATION IN TI-TIB COMPOSITES CHARACTERISED USING HIGH ENERGY X-RAY DIFFRACTION	GENERATION, MODELLING AND VALIDATION OF STATISTICALLY EQUIVALENT MICRO-STRUCTURES
	Hui yun Hwang(Andong National University)	Koichi Bun(Kyoto Institute of Technology), Toshihiro Motochika(Kyoto Institute of Technology), Asami Nakai(Gifu University), Hitoshi Kitamura(Toyobo Co. Ltd.), Hidetoshi Sonoda(Toyobo Co. Ltd.), Satoshi Nagoh(Toyobo Co., Ltd.)	Yoshihisa Tanaka(National Institute for Materials Science)	Ludovic Ropars(EADS France), Moukrane Dehmas(Institut Jean Lamour - Universite de Lorraine), Sophie Gourdet(EADS France), David Tricker(Materion AMC), Elisabeth Aeby-gautier(Centre National de la recherche scientifique (CNRS)	Frank Gommer(University of Nottingham), Andreas Endruweit(University of Nottingham), Andrew C Long(University of Nottingham)
	In this work, we predicted piezoelectric constants of glass fiber reinforced epoxy composite materials. By comparison between predicted result and experimental results, it showed similar results.	The purpose of this study is to establish high-cycle molding for the continuous fiber reinforced thermoplastic composites by braiding technique.	The measurement of thermal deformation around the interface was analyzed by moire and DL method and the transverse and longitudinal CTE of carbon fiber was estimated by strain distribution.	The transition from TiBz to TiB, via the TiB-Bf metastable phase, was characterised. The kinetics of phase transformations and the beta transus were found modified by the mechanical alloying process.	An automated procedure for the precise detection of carbon fibre cross-sections in micrographs is presented. The gathered data is used for the generation of statistically equivalent micro- structures.
17:30	THERMAL CONDUCTIVITY OF CARBON FIBER FABRICS	TOOL MATERIAL EFFECTS ON PROCESS INDUCED DEFORMATION OF COMPOSITE SPAR STRUCTURES	WEAR BEHAVIOUR OF PARTICULATE REINFORCED ALUMINIUM COMPOSITES	PREPARATIONS AND EVALUATION OF ELECTRICAL CONDUCTIVITY FOR TIB2/ AL COMPOSITES BY SPARK SINTERING PROCESS	3D FULL-FIELD DISPLACEMENTS/STRAINS MEASUREMENTS IN COMPOSITES AT MICRO-SCALE
	Yue Yang(University of Ottawa), Francois Robitaille(University of Ottawa), Simon James Hind(National Research Council Canada)	Takayuki Shimizu(Mitsubishi Heavy Industries, Ltd.), Toshio Abe(Mitsubishi Heavy Industries, Ltd.)	Dimitrios Myriounis(Sheffield Hallam University), Syed T Hasan(Sheffield Hallam University)	Gen Sasaki(Hiroshima University)	Farhad Mortazavi(Ecole Polytechnique de Montreal), Elias Ghossein(Ecole Polytechnique de Montreal), Martin Lévesque(Ecole Polytechnique de Montreal), Isabelle Villemure(Ecole Polytechnique de Montreal)
	In-plane and through thickness thermal conductivity of a non- crimp and twill carbon fabric are measured at various Vfs. Defined trends showing the effect of Vf and presence of air are identified.	Tool material effects on process induced deformation of composite wing spar structures were investigated using three tools made of different materials: aluminum, invar and CFRP.	The aim of the study is to compare the wear behaviour and the thermal profiles of different formulations of aluminium composites reinforced with different types of ceramic particles, SiC and Al2O3.	20v0%TiB2 particle dispersed Al composites with high density were fabricated by spark sintering process. This composites have high electrical conductivity.	The measurement of 3D full-field displacement/strain in composites at microscale based on the correlation of volume images from the undeformed and deformed state of the sample under loading.
17:50	STIFFNESS EVALUATION OF THE COMPOSITE LAMINATES WITH WAVY PLIES AND THEIR STABILITY ANALYSIS	NUMERICAL APPLICATIONS AND VERIFICATION OF AN INTEGRATED FLOW-STRESS MODEL IN PROCESSING OF THERMOSET COMPOSITES	SYNTHESIS, MICROSTRUCTURE AND MECHANICAL PROPERTIES OF NB-BASED COMPOSITES CONTAINING CARBIDE AND BORIDE CERAMIC PHASES	MICROSTRUCTURE, MECHANICAL AND TRIBOLOGICAL PROPERTIES OF AUSTENITIC STAINLESS STEEL COMPOSITES REINFORCED WITH TIB2 PARTICLES	MULTIAXIALLY LOADED SHORT FIBRE POLYAMIDE: A CONTRIBUTION TO NON-DESTRUCTIVE EVALUATION OF MICRO CRACKING AND DAMAGE EVOLUTION
	Hamid Dalir(Bombardier), Jean-Evrard Brunel(Bombardier), Franck Dervault(Borland Software Corporation), Alain Landry()	Mehdi Haghshenas(University of British Columbia), Reza Vaziri(University of British Columbia), Anoush Poursartip(University of British Columbia)	Xinjiang Zhang(Harbin Institute of Technology)	Iwona Sulima(Pedagogical University of Krakow)	Karoline Metzkes(BAM Federal Institute for Materials Research and Testing), Yvonne Hentschel(BAM Federal Institute for Materials Research and Testing), Volker Trappe(BAM Federal Institute for Materials Research and Testing)
	The main objective of this paper is to present explicit formulas to evaluate the influence of the out-of-plane fiber waviness on the stiffness of the composite panels.	Numerical examples are presented to verify and highlight the capabilities of an integrated approach to modeling flow and stress development in processing of thermoset composites.	Nb-based composites containing carbide and boride ceramic phases were synthetized. The introduction of boride and carbide improved the harden and strength of Nb-based composites.	The present work aims to investigate the effect of the reinforcing ceramic particles on the mechanical and tribological properties and microstructure of the steel-TiB2 composites.	The micro cracking behaviour and the damage evolution in short glass fibre reinforced polyamide due to multiaxial mechanical loadings is presented.
	MODELING 4-POINT BENDING OF THIN CARBON- EPOXY LAMINATES	MODELING AND CHARACTERIZATION OF THERMOPLASTIC COMPOSITES PEEK/CARBON	HOW VARIOUS UNCERTAINTIES AND ASSUMPTIONS AFFECT B-BASIS ALLOWABLES DEVELOPMENT	TITANUM ENHANCED SINTERING THROUGH LIQUID PHASE SINTERING	
	David Thibaudeau(Royal Military College of Canada), Diane Wowk(Royal Military College of Canada), Catharine Marsden(Royal Military College of Canada)	Kouwonou Kodjo Dodji(Ecole de Technologie Superieure), Tan Pham(École de technologie supérieure - Université du Québec), Gilbert Lebrun(University of Quebec at Trois-Rivieres)	Carl Quinn Rousseau(Lockheed Martin)	Evan Schumann(ICMCB), Mélanie Majimel(ICMCB), Jean- louis Bobet(ICMCB), Jean-françois Silvain(ICMCB)	
	Methodology for predicting the interlaminar stress distributions within an angle-ply laminate in four-point bending. FEA is used to develop consistent methods for model creation and result extraction.	One of the manufacturing methods is the stamp-forming. Before simulation, it's necessary to perform the characterization tests. This paper present the results for thermoplastic composites PEEK/CARBON.	This paper examines the complexity of test-method-induced effects on B-basis allowable strengths, and how that interacts with failure-criteria to influence strength prediction reliability/accuracy.	We aim to achieve fully dense titanium by sintering blended elemental Ti/TiH2-AI powders at low temperatures, thus reducing processing costs, and achieve industrially applicable mechanical properties	
18:00		I	COCKTAILS (Cash Bar)		
19:00			BANQUET		
22:00			End		

	Koom 525	Room 520f	Koom 520be		Koom 516ab
16:30			BREAK		
	IMPACT & DYNAMIC RESPONSES 8 Chairs: Reza Vaziri, Christophe Bois	INTERFACE 7 Chairs: TBD	THERMOPLASTIC COMPOSITES 4 Chairs: Irene Fernandez Villegas, Ali Yousefpour		STIMULUS RESPONSIVE POLYMER & COMPOSITES & INTERFACES - POSTER Chairs: Tri-Dung Ngo, Daniel Therriault
16:50	EFFECT OF VARIOUS KNITTING TYPES ON IMPACT PROPERTIES OF TEXTILE COMPOSITES	INVESTIGATION OF SUBCRITICAL CRACK GROWTH IN GLASS FIBERS USING LOAD RELAXATION TESTS	INDUCTION WELDING OF PPS-CARBON COMPOSITES: MODELING AND EXPERIMENTAL	16:50	BENDING DEFORMATION LIMITS FOR CORRUGATED MORPHING SKINS Andre Schmitz, Peter Horst
	Ozgur Demircan(Kyoto Institute of Technology), Tadashi Fujimura(Shima Seiki Mfg, Ltd.), Shinsuke Ashibe(SHIMA SEIKI	ON BUNDLES Jacques Luc Lamon(Centre National de la recherche scientifique CNRS)	RESULTS Alfonso Maffezzoli(University of Salento)	16:54	EFFECT OF SIZING ON THE INTERFACIAL PROPERTIES OF CARBON FIBER/BMI UNDER DIFFERENT PROCESSING TEMPERATURE
	Mfg. Ltd.), Tatsuya Kosui(SHIMA SEIKI MFG. Ltd), Asami Nakai(Gifu University)			16:58	EXPERIMENTAL EVIDENCE OF THE INTERFACE/INTERPHASE FORMATION BETWEEN POWDER COATING
	Biaxial weft knitted fabric includes warp and weft yarn layers which are held together by knitted yarn. The present work concentrates on the impact properties of biaxial weft knitting	An approach to static fatigue is proposed, based on tests on tows under deformation-controlled condition. A closed form expression for statistical distributions of fibre lifetimes was	In this work, the experimental and numerical analysis of continuous induction welding of Poly phenilene sulfide (PPS)- carbon composites was carried out		AND COMPOSITE MATERIAL Ahmad Fabs, Aurore Lafabrier THE DEBENDMANCE OF THE IONIC LIQUID, CONTAINING ELECTROACTIVE BOLYMED ACTUATODS
	composites.	established.		17:02	UNDER AMBIENT AIR CONDITIONS
17:10	MODAL ANALYSIS OF COMPOSITE SANDWICH STRUCTURES WITH VISCOELASTIC LAYERS	SIMULATION OF THE MECHANICAL BEHAVIOR OF A THREE DIMENSIONAL COMPOSITE	REPAIR OF CF/PA6 LAMINATE BELOW MELTING POINT WITH BARELY VISIBLE IMPACT DAMAGE	17:06	Indrek Must, Alvo Aabloo, Inga Põldsalu, Friedrich Kaasik, Urmas Johanson, Andres Punning INFLUENCE OF THERMAL TREATMENT ON PROPERTIES OF THIN-FILM COMPOSITES CDS-PBS
	Christenha I colors(Fools Dolotochoisen de Montecol) Edith	Alain Darain and Italianaite de Tarka alaria de Compionero)	Manata Kanandi Manadi Nishihara Mandi Hais (Kanta	17.00	OBTAINED AT THE CDS(SOL)/PB2+(AQUA) INTERFACE
	roland Fotsing(Ecole Polytechnique de Montreal), Annie Ross(Ecole Polytechnique de Montreal)	Manh hung Ha(Universite de Technologie de Compiegne), Manh hung Ha(Universite de Technologie de Compiegne), Ludovic Cauvin(Universite de Technologie de Compiegne)	University), Chika Uchijo, Mototsugu Tanaka, Hiroshi Saito, Isao Kimpara (Kanazawa Institute of Technology)	17:10	Larisa maskaeva, natala Forosiyanaya, amana Siminova, vyacnesav markov OXIDATION OF ZIRCONIUM DIBORIDE-SILICON CARBIDE CERAMIC COMPOSITES IN DISSOCIATED DV//OB/
	Damping of composite sandwich beams was improved by	We propose an approach to characterize the mechanical	Compression test with specimen repaired the dent below		OXYGEN Hua Jin, Songhe Meng, Weihua Xie, Chenghai Xu, Liyuan Qin
	inserting viscoelastic layers between face sheet plies. Modal	properties of interlock woven composite structures : creation of	melting point were carried out to evaluate the efficiency of	17:14	CONSTITUTIVE THEORY OF YEOH TYPE ELASTIC DIELECTRICS POLYMER
	analysis was investigated by means of laser vibrometer and curve fitting.	geometry, meshing and homogenization	repair of carbon fiber reinforced thermoplastic with barely visible impact damage.	1/.14	Liwu Liu, Xinghuan Qi, Yinzi Zhao, Yanju Liu
	DAMACE DESIGNANCE AND DAMACE TOI EDANCE	BUACE CEDADATED EDOVV/DOM MATDIV EOD	EVEDIMENTAL AND NUMEDICAL INVECTICATION	17:18	THERMAL DECOMPOSITION OF PBO FIBER AND HIGH THERMAL MECHANICAL PROPERTIES OF PBO COMPOSITE MATERIALS
17:30	OF COMPOSITE LAMINATES WITH DISPERSED STACKING SEQUENCES	CARBON FIBRE REINFORECED COMPOSITES	OF LONG-TERM BEHAVIOUR OF MODIFIED TEXTILE- REINFORCED POLYPROPYLENE		Liping Bian, Jiayu Xiao, Jingcheng Zeng, Suli Xing, Changping Yin, Jinshui Yang
	Claudio Saul Lopes(IMDEA Materials), Tamer Abdella Sebacy(Zagazig University), Emilio V González(Universidad de Gerona), Norbert Blanco(Universidad de Gerona), Josep Costa(Universidad de Gerona)	Mohammadali Aravand(Katholieke Universiteit Leuven), Larissa Gorbatikh(Katholieke Universiteit Leuven), Stepan V. Lomov(Katholieke Universiteit Leuven), Ignaas Verpoest(Katholieke Universiteit Leuven)	Werner A. Hufenbach, Volker Ulbricht, Dominik Branke, Markus Kaestner(Technische Universitat Dresden), Edith Maeder(Leibniz Institute of Polymer Research Dresden), Martin Pohl(Leichtbau- Zentrum Sachsen GmbH)		
	A strategy to optimize the low-velocity impact behavior of laminates, by tailoring their stacking sequence without affecting in-plane properties, is proposed and verified by experiments.	Reaction induced phase separating Polyoxymethylene microphases were found to be able to improve the fracture properties of the neat epoxy matrix as well as the carbon fibre reinforced composites.	Here, the creeping behaviour of unreinforced polypropylene (PP) and textile reinforced PP with surface modification under compression have been investigated experimentally and simulated numerically.		
17:50		INFLUENCE OF CROSSLINK RATIO ON THE MECHANICAL PROPERTIES OF POLYMERIC NANOCOMPOSITES AND INTERPHASE: A MOLECULAR DYNAMICS SIMULATION	THE EFFECT OF FABRIC SCOURING ON FIRE AND MECHANICAL PERFORMANCE OF FLAME RETARDED FLAX/PP AND FLAX/PLA COMPOSITES		
		Byungjo Kim(Seoul National University), Joonmyung Choi(Seoul National University), Suyoung Yu(Seoul National University), Seunghwa Yang(Dong-A University), Maenghyo Cho(Seoul National University)	Wiwat Pornwannachai(University of Bolton), Baljinder Kandola(University of Bolton), Gill Smart(University of Bolton)		
		The mechanical properties of various cases of nanocomposites	Scouring increased the flammability and mechanical properties		
		observed as particle size decreases or crosslink ratio increases.	is no advantage of using extra process to produce FR composite laminate.		
18:10		DETERMINING THE MECHANICAL INTERPHASE THICKNESS OF POLYMERIC NANOCOMPOSITES USING MULTISCALE APPROACH	CHALLENGES FOR THE MANUFACTURING OF A LATTICE STRUCTURE FUSELAGE SECTION WITH PREPREG LAY-UP TECHNOLOGY		
		Joonmyung Choi(Seoul National University), Hyunseong Shin(Seoul National University), Suyoung Yu(Seoul National University), Seunghwa Yang(Dong-A University), Maenghyo Cho(Seoul National University)	Jens Mack(Institut fuer Verbundwerkstoffe GmbH), Peter Mitschang(Institut fuer Verbundwerkstoffe GmbH)		
		Throughout a multiscale method which connects MD with FEA, an effective interphase thickness of spherical SiC/Epoxy nanocomposites is characterized numerically.	First results for a manufacturing process in which a metallic fuselage section is replaced with a carbon fiber prepreg reinforced lattice structure are properties of this paper.		
18:00			COCKTAILS (Cash Bar)		
19:00			BANQUET		
22:00			End		

	Room 515	Room 519a	Room 514	Room 524ab	Room 524c			
7:30 8:30								
	PLENARY (Room 710) - Mohini Sain: A review: Carbon Fiber Reinforced composites for automotive".							
-		NANOCLAYS 1	APPLICATIONS 9	FRACTURE AND DAMAGE 17	FRACTURE AND DAMAGE 19			
		Chairs: Cagri Ayranci, Edu Ruiz	Chairs: Marie-Josée Potvin, Wanping Zheng	Chair: Shuguang Li	Chair: Gabriel Laplante			
9:30		HIGH-PERFORMANCE EPOXY HYBRID NANOCOMPOSITES MODIFIED BY NANOCLAY AND PES	ENVIRONMENTAL-FRIENDLY FOOTBRIDGE MADE OF CFRP, GFRP AND TIMBER	FINITE ELEMENT MULTI-SCALE MODELING OF THE FAILURE MECHANISMS IN A 3D WOVEN COMPOSITE	INVESTIGATING DELAMINATION MIGRATION IN COMPOSITE TAPE LAMINATES			
		Boming Zhang(Beihang University), Yang Wang(Beihang University)	Urs Otto Meier(Empa, Swiss Federal Laboratories for Materials Science & Technology)	Lucien Laiarinandrasana(Ecole Nationale Superieure des Mines de Paris), Wassim Trabelsi(Ecole Nationale Superieure des Mines de Paris), Alain Thionnet(Ecole Nationale Superieure des Mines de Paris)	Nelson V De carvalho, James Gordon Ratcliffe			
		Hybrid nanocomposites were prepared. They have semi-IPN structure and orderedly exfoliated structure. Organoclay and PES synergically toughened the epoxy resin.	It has been shown that in combination with new connecting elements, like pin loaded CFRP straps, it is possible to use glulam in highly stressed and dynamically loaded structures.	Progressive degradation and failure mechanisms of 3D woven composite are analyzed using X-ray tomography technique. Multi-scale FE modeling taking these mechanisms into account is performed	A new test method is presented, which is designed for characterizing the migration of a delamination in composite tape laminates between different ply interfaces.			
9:50		MIXED MODE FRACTURE BEHAVIOR OF EPOXY/NANOCLAY NANOCOMPOSITES	STUDYING THE HETEROGENEITY OF DISCONTINUOUS FIBER COMPOSITES USING A NEW FULL-FIELD STRAIN MEASUREMENT SYSTEM	FAILURE MODELLING OF IMPREGNATED FLAX YARNS FROM FIBRE AND INTERPHASE PROPERTIES	REPRESENTING TRANSLAMINAR FRACTURE AS A COHESIVE CRACK			
		Michele Zappalorto(University of Padua), Marco Salviato(), Marino Quaresimin(University of Padua)	Kevin Johanson(University of Nottingham), Lee T Harper(University of Nottingham), Michael Johnson(University of Nottingham), Andrew Kennedy(University of Nottingham), Nicholas A Warrior(University of Nottingham)	Shyam Mohan Panamoottil(University of Auckland), Raj Das(University of Auckland), Krishnan Jayaraman(University of Auckland)	Rita Teixeira(Imperial College of Science), Silvestre T Pinho(Imperial College of Science)			
		The mixed mode toughness of epoxy/nanoclay nanocomposites is analysed. It is found that nanomodification generally enhances the fracture toughness, but improvements depend on the mode mixity.	The advantages of Digital Image Correlation (DIC) over traditional strain measurement techniques, highlighting the importance of collecting data from both surfaces of a discontinuous fiber specimen.	This paper aims to understand the failure behavior of the fibre and interface components of a flax composite, and to use this understanding to describe the failure of matrix-impregnated flax yarns.	Experimental work on CT multidirectional laminates is done. Each of the toughness values is used to define a cohesive law, and the specimens are simulated using a cohesive approach in a FE model.			
10:10		FABRICATION AND PROPERTY STUDY OF POLYMER/FIBER/CLAY TERNARY COMPOSITES	NUMERICAL DESIGN OPTIMISATION OF A COMPOSITE REACTION LINK	DAMAGE ANALYSIS OF ALUMINUM / CFRP HYBRID BEAM UNDER THREE POINT BENDING	AN EXPERIMENTAL METHOD TO DETERMINE THE CRITICAL ENERGY RELEASE RATE ASSOCIATED WITH LONGITUDINAL COMPRESSIVE FAILURE IN CFRP			
		Xu Li(Istitute of Materials research and Engineering)	Yang Yang(The Welding Institude (TWI)), Clement Schuhler(The Welding Institude (TWI)), Chris M Worrall(The Welding Institude (TWI))	Hee chul Kim, Dong kil Shin, Jung goo Kim, Jung ju Lee (Korea Advanced Institute of Science & Technology), Kum cheol Shin (Shin Ansan University)	Daniel Svensson(University College of Skovde), Ulf Stigh(University College of Skovde), Svante Alfredsson(University College of Skovde)			
		Simultaneous reinforcing and toughening effect can be realized by melt compounding a few percent of specifically designed clay into polyamide/glass-fibre composites.	A gradient descent method was applied for implicit PEA-based optimisation of a composite reaction link. The final weight was reduced by 45%, and the maximum predicted deflection was reduced by 33%.	Failure mechanism of hybrid beam under the three point bending loading was investigated by FEA. Al SHS beam wrapped by four ples of UD-CFRP with designed stacking sequence was used.	This paper focuses on longitudinal compressive failure in CFRP. A cohesive law associated with the damage growth is measured experimentally and FE-simulations are performed to validate the method.			
10:30		DEVELOPMENT HIGH TEMPERATURE RESISTANT MATERIALS USING CARBON/PHENOLIC PREPREGS WITH NANOCLAYS	MODELING THE FIRE STRUCTURAL PERFORMANCE OF ALUMINUM AND REINFORCED POLYMER COMPOSITES	DAMAGE SUPPRESSION IN THIN PLY ANGLE-PLY CARBON/EPOXY LAMINATES	MICROMECHANICAL FAILURE ANALYSIS OF UNIDIRECTIONAL FIBER-REINFORCED COMPOSITES UNDER IN-PLANE AND TRANSVERSE SHEAR			
		Exequiel Santos Rodríguez(Universidad Nacional de Mar del Plata)	Everson Kandare(Royal Melbourne Institute of Technology)	Jonathan Fuller(University of Bristol), Michael R Wisnom(University of Bristol)	Lei Yang(Beihang University), Ying Yan(Beijing University of Aeronautics and Astronautics), Zhiguo Ran(Beihang University)			
		Composite materials used in the aerospace industry must meet severe requirements such as dimensional stability, high stiffness and high temperature resistance.	This paper presents analytical models for the prediction of the fire structural performance of aluminum and FRP composites. The models accurately modeled failure times.	Thinply angle-ply laminates tested under uniaxial tension have the potential to exhibit high strains to failure with little or no delamination or microcracking.	The failure behavior of unidirectional FRPs subjected to in- plane and transverse shear is studied. The shear strength is predicted and the failure mechanism is clearly revealed.			
10:50		L	BREAK	L	L			

	Room 522	Room 518ab	Room 520ad	Room 519b	Room 520c
7:30					
0.90		PLENARY (Room 710) - Mohini	i Sain: A review: Carbon Fiber Reinfor	ced composites for automotive".	
	MECHANICAL PROPERTIES 4	JOINTS 1	EXPERIMENTAL TECHNIQUES 2	METAL MATRIX COMPOSITES V	Chair: Hiroyuki Hamada
	Chairs: Chun Li	Chairs: Yasutomo Nomura, Eric Pomerleau	Chair: Hamid Dalir	Chair: Helmi Attia	Chair: Guijun Xian
9:30	TIME-TEMPERATURE BEHAVIOUR OF POLYIMIDE MATRIX	EFFECTS OF PROCESSING PARAMETERS ON ELECTRO-FUSION JOINING BEHAVIOR OF CF/PPS	EXPERIMENTAL AND NUMERICAL VALIDATION OF AN ANALYTICAL CALCULATION METHOD FOR NOTCHED FIBRE-	INFLUENCE OF DEFORMATION DEGREE ON THE MICROSTRUCTURE OF TITANIUM MATRIX	COMPARISON BETWEEN TRC AND CFRP AS EXTERNAL REINFORCEMENT FOR PLAIN CONCRETE
		COMPOSITES	REINFORCED MULTILAYERED COMPOSITES UNDER BENDING AND COMPRESSIVE LOADS	COMPOSITES	BEAMS
	Thibaut Crochon(Ecole Polytechnique de Montreal), Martin Lévesque(Ecole Polytechnique de Montreal), Chun Li(National Research Council Canada), Simon Dulong(Ecole Polytechnique de Montreal)	Daiki Tanabe(Osaka University), Shinji Tsutaya(Kinki University), Kazuaki Nishiyabu(Kinki University), Tetsusei Kurashiki(Osaka University)	Bernd Grüber(Technische Universitat Dresden), Werner A. Hufenbach(Technische Universitat Dresden), Robert Gottwald(Technische Universitat Dresden), Martin Lepper(Technische Universitat Dresden), Binquan Zhou(Technische Universitat Dresden)	Weijie Lu(Shanghai Jiao Tong University), Xianglong Guo(Shanghai Jiaotong University)	Svetlana Verbruggen(Vrije Universiteit Brussel), Jan Wastiels(Vrije Universiteit Brussel), Tine Tysmans(Vrije Universiteit Brussel), Silke Puystiens(Vrije Universiteit Brussel)
	The temperature and physical aging dependence of the viscoelastic behaviour of a polyimide matrix was investigated using 3 point bending and modeled using Schapery's theories. A good fit was achieved.	In this study, the electro-fusion welding behavior of UD-CF/PPS and woven-CF/PPS laminates jointed using the Ni-Cr wire as a resistance heating element was investigated.	Experimental investigations on stress concentrations in notched composites are presented, using adapted measurement methods for large deflections and a new test rig for in-plane compression loading.	Few researches focus on the deformation of titanium matrix composites. Microstructure evolution of titanium matrix composites with the increase of deformation degree is discussed in this work.	Textile Reinforced Inorganic Phosphate Cement (IPCTRC) can be used to strengthening concrete structures. The behaviour of concrete beams externally reinforced with IPCTRC and CFRP is compared.
9:50	PBO FABRIC REINFORCED THERMOPLASTIC COMPOSITE MANUFACTURED BY SOLUTION IMPREGNATION METHOD	SURFACE PRE-TREATMENT OF CFRP BY USING LASER RADIATION	RESIDUAL STRESS MEASUREMENTS OF GLASS/EPOXY COMPOSITE LAMINATE USING A NEW TYPE OF SPECIMEN DESIGN	NACRE-INSPIRED, STRONG AND DUCTILE CNT/AL COMPOSITES FABRICATED BY FLAKE POWDER METALLURGY	FINITE ELEMENT ANALYSIS ON GLASS FIBRE REINFORCED COMPOSITES WITH INORGANIC PHOSPHATE CEMENT MATRIX: COMPARISON OF INBUILT ABAQUS CONCRETE MODELS
	Anchang Xu(Shinshu University)	Fabian Fischer(Technische Universitat Carolo-Wilhelmina Braunschweig), Stefan Kreling(Technische Universitat Carolo- Wilhelmina Braunschweig), Klaus Dilger(Technische Universitat Carolo-Wilhelmina Braunschweig)	Johnny Jakobsen(Aalborg University), Jens H. Andreasen(Aalborg University), Ole T. Thomsen(Aalborg University)	Zhiqiang Li(Shanghai Jiao Tong University), Genlian Fan(Shanghai Jiaotong University), Lin Jiang(Shanghai Jiaotong University), Yishi Su(Shanghai Jiao Tong University), Di Zhang(Shanghai Jiao Tong University)	Maciej Mikolaj Wozniak(Vrije Universiteit Brussel), Tine Tysmans(Vrije Universiteit Brussel), Johnny Vantomme(Vrije Universiteit Brussel)
	This study explores a reformative solution impregnation method for molding fabric reinforced thermoplastic composite, aiming for a high fiber volume fraction.	Adhesive bonding is an optimal method for joining CFRP. This paper present laser radiation as an innovative tool to ensure a defined surface pre-treatment as the key process step of adhesive bonding.	The presented paper aims on characterizing residual stresses in a glass/powy laminate as the laminate is subjected to different boundary conditions. A new type of specimen is explored in this work.	A bottom-up flake powder metallurgy route was developed to fabricate strong and ductile nacer-inspired CNT/AI composite, which was stacked alternatively with parallel aligned CNTs and AI lamellae.	The paper compares inbuilt concrete models available in the commercial FEM software Abaqus, to prove their adequacy for simulating the mechanical behaviour of cement composites.
10:10	TENSILE AND COMPRESSION PROPERTIES OF HYBRID COMPOSITES – A COMPARATIVE STUDY	EVALUATION OF BEARING DAMAGE BEHAVIOR IN THIN TITANIUM FILMS-CFRP HYBRID LAMINATE	UNCERTAINTY ANALYSIS FOR OPTICAL PERMEABILITY MEASUREMENT OF REINFORCING TEXTILES	TURNING MACHINABILITY OF FIBER REINFORCED ALUMINUM ALLOY COMPOSITES	EFFECTS OF COMBINED ENVIRONMENTAL AGENTS ON PULTRUDED GFRP COMPOSITES FOR BUILDING CONSTRUCTIONS
	Durai prabhakaran Raghavalu thirumalai(Technical University of Denmark)	Tomoki Yamada(Tokyo University of Science), Hayato Nakatani(Osaka City University), Shinji Ogihara(Tokyo University of Science)	Ewald Fauster(Montanuniversitat Leoben), Harald Grössing(Montanuniversitat Leoben), Ralf Schledjewski(Montanuniversitat Leoben)	Kazunori Asano(Kinki University), Kenji Higashi(KUBOTA Corporation), Hiroyuki Yoneda(Kinki University)	Valter Carvelli(Polytechnic Institute of Milan), Guglielmo Carra(Polytechnic Institute of Milan)
	To study hybrid & non-hybrid UD composites performance of hybrid filament wound and hybrid fabric consists of glass and carbon fibres are considered.	Fiber metal laminates that consist of carbon fiber composites and thin titanium films were applied to bolted joints to improve damage behavior of composite laminates.	An optical permeability measurement system is investigated in terms of the measurement uncertainty associated with the resulting 2-dimensional permeability values.	To develop a machinable aluminum matrix composite, short potassium titanate fiber was selected as a reinforcement. The effects of the fiber in the composite on the machinability were clarified.	This paper presents a research dealing with the durability of pultruded Glass Fiber Reinforced Polymers (GFRP), with three different resins, used in building construction as structural members.
10:30	RANDOM DISTURBING MODEL FOR THERMAL EXPANSION PROPERTY PREDICTION OF UNIDIRECTIONAL COMPOSITE	COMPARISON OF MECHANICAL PROPERTIES IN WELDING JOINT METHODS OF CF/PP	NANOINDENTATION OF A CARBON-FIBRE COMPSOSITE MICROSTRUCTURE: INTERPHASE CHARACTERISATION AND THE EFFECT OF RESIDUAL THERMAL STRESS	STRENGTHENING OF POWDERMETALLURGICALLY PRODUCED ALUMINUM BY NANOSCALE PARTICLES	EFFECT OF TRM ON THE FLEXURAL PERFORMANCE OF RC BEAMS
	Zhiguo Ran(Beihang University), Ying Yan(Beijing University of Aeronautics and Astronautics), Lei Yang(Beihang University)	Yasutomo Nomura(The University of Tokyo), Kiyoshi Uzawa(Kanazawa Institute of Technology), Hideaki Murayama(The University of Tokyo), Isamu Ohaswa(The University of Tokyo), Jun Takahashi(The University of Tokyo)	Mark Hardiman(University of Limerick), Conor T. Mccarthy(University of Limerick)	Alla Kasakewitsch(Technische Universitat Clausthal)	Sassan Rakhshani(University of British Columbia), Ahmad Rteil(University of British Columbia), Mojtaba Komeili(University of British Columbia), Abbas Milani(University of British Columbia)
	This paper developed a new random disturbing model for coefficient of thermal expansion prediction of UD composite.the predicted results agreed with Schapery's predictions and experimental data well.	In order to apply the welding joint technology for CF/PP, we evaluated the mechanical properties of jointed parts by tensile test.	Nanoindentation can be used to determine the properties of carbon-fibre composite constituents. Finite-element studies are used to determine the area of contact and residual stress influence.	A powder metallurgical (PM) route using nano-scale ceramic and micro-scale aluminum (Al) powders were used to produce dispersion strengthened MMCs.	The effect of different types of textile reinforced mortar on the flexural performance of reinforced concrete beams is examined numerically and critical force/deflection curves were extracted.
10:50			BREAK		1

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- 10.0	Koom 525	Koom 5201	Koom 520be		Koom 516ab				
7:30									
0.30		PLENARY (Room 710) - Mohini Sain: A review: Carbon Fiber Reinforced composites for automotive".							
	STRUCTURAL RESPONSE & DESIGN 1	INTERFACE 8	THERMORI ASTIC COMPOSITES =		Chair: Hiroyuki Hamada				
	Chairs: Rajamohan Ganesan, Dineshkumar Harursampath	Chair: Iosif Daniel Rosca	Chairs: Malin Akermo, Arthur Levy		Chairs: Pascal Hubert, Jason Lo				
9:30	NEW DEVELOPMENTS IN STRUCTURE/PROPERTY	CNT-GRAFTED CARBON FIBER COMPOSITES:	ALIGNED DISCONTINUOUS CARBON FIBRES IN	9:30	EFECTS OF SHORT CARBON FIBERS APPLICATION				
	RELATIONSHIPS	CHARACTERIZATION OF THE FIBER/MATRIX	THERMOPLASTIC MATRICES VIA EXTRUSION OF UD		Anita Olszowka-myalska, Jerzy Myalski				
		INTERFACE	IAFE	9:34	GLASSY CARBON PARTICLES AS A COMPONENT				
	Wendy Wenjun Tian(CSIRO), Buu Dao(CSIRO), Russell John	Niels De greef(Katholieke Universiteit Leuven), Aranud Magrez(École	Jonny Blaker(Imperial College of Science), Alexander		Anita Olszowka-myalska, Jerzy Myalski				
	Varley(CSIRO)	poryteennique rederate de Lausanne), Jean-pierre Locquet(Katnoneke Universiteit Leuven), László Forró(École polytechnique fédérale de Lausanne), Jin won Seo(Katholieke Universiteit Leuven)	Bismarck(Imperial College of Science), Ulf Nagel(University of Strathclyde)	9:38	STIMULUS RESPONSE POLYMER AND MULTIFUNCTIONAL COMPOSITES: CHALLENGES AND PROSPECTS				
	This study investigate the correlations between the epoxy and	Carbon nanotubes are successfully grafted on carbon fibers at	Aligned discontinuous high volume fraction (54%) carbon		Anna Janina Dolata, Maciej Dyzia				
	amine chemical structures and their thermal and mechanical	500°C, without any degradation of carbon fibers. The	fibre/PEEK composites with excellent fibre alignement were	9:42	MOULD CASTING OF ALUMINIUM MATRIX HETEROPHASE COMPOSITES				
	properties through a range of epoxy and annue system.	strength measurements.	feedstock.		Maciej Dyzia, Anna Janina Dolata				
		-		9:46	ELECTRICAL CONDUCTIVITY AND SPATIAL DISTRIBUTION OF PARTICLE DISPERSED COMPOSITES				
9:50	OPTIMUM DESIGN OF LAMINATED PLATE WITH	PRODUCTION AND EVALUATION OF INTRA-	PROCESSING CONDITIONS AND PROPERTIES OF CONTINUOUS FIRER REINFORCED GE/PR THERMORI ASTIC		Kenjiro Sugio, Narihiro Kawano, Kota Ishikawa, Moonhee Lee, Gen Sasaki				
	DISCRETE PLY ANGLES BASED ON GSFP METHOD	FILAMENT HYBRIDS	MATRIX COMPOSITES MANUFACTURED FROM DIFFERENT	9:50	LASER SURFACE TREATMENT OF AL-SIP COMPOSITES				
			PRE-IMPREGNATED MATERIALS		Lustolde Martínez Laorden, Pilar Rodrigo, Belén Torres, Joaquin Rams				
	Shutian Liu(Dalian University of Technology)	Richard Murray(University of Birmingham)	Joao Pedro Nunes, Marta Sofia Santos (Universidade do Minho), Joao Francisco Silva (Instituto Politecnico do Porto), Paulo Jorge	9:54	LIFETIME PREDICTION OF SELF-HEALING CERAMIC MATRIX COMPOSITE STRUCTURES				
			Novo(Escola Superior de Tecnologia e Gestao), António Torres		Myriam Kaminski, Elen Hemon, Jean-françois Maire, Florent Bouillon, Christian Fagiano				
	The method of Commission Share Trunction beaud	This	Marques (Universidade do Porto)	9:58	SOUEEZE CASTING METHODS				
	Parameterization is proposed and can be seen as a common	and development of a rig to enable the production of intra-filament hybrids. Methodology is	ontinuous GF/PP composites made from thermoplastic pre-						
	method for solving the optimization problem with discrete	based on spreading of carbon and glass bundles then secondary	impregnated materials produced by direct melting and intimate		Essam Anmed Snalady SIZE EFFECTS OF SIC PARTICLES ON MECHNICAL PROPERTIES OF CAST CARBON NANOFIBERS				
	variables.	manipulation.	contact methods	10:02	REINFORCED AZ91 MAGNESIUM COMPOSITES				
10.10	ROTORDYNAMICS OF TAPERED COMPOSITE	SURFACE TREATMENT OF CONTINUOUS FIBER FOR	HIGH STRAIN RATE OMPRESSIVE BEHAVIOUR OF		Sang kwan Lee				
10.10	DRIVESHAFT BASED ON A LAGRANGIAN FINITE ELEMENT	IMPREGNATION AND MECHANICAL PROPERTIES OF THERMOPLASTIC COMPOSITES	SELF REINFORCED - POLY(ETHYLENE TEREPHTALATE) COMPOSITE CORRUGATED CORES						
	Maind Alexandroni(Companylis University) Britanshar	Vaishi Pun(Vuoto Instituto of Tashnalam). Iun Uimi(Taudoloma	Christof Calumidar (Bauel Institute of Taskaslam) Calumb						
	Ganesan(Concordia University), Rajamonan	Corporation), Asami Nakai(Gifu University), Hiroyuki	Kazemahvazi(Royal Institute of Technology), Sonrab						
		Hamada(Kyoto Institute of Technology), Akira Fudauchi(Kyoto Institute of Technology)	Zenkert(Royal Institute of Technology), Mark						
	In this study, the rotordynamics analysis of tapered composite	In this study, in order to improve both impregnation state and	The compression strain rate sensitivity of the material and the						
	driveshaft is carried out using the Lagrangian finite element	interfacial properties, surface treatment by using resin with low	influence of slenderness ratio will be investigated by quasi static						
	formulation, and for this purpose, the Timoshenko beam theory is used.	molecular weight and same materials with matrix was proposed.	and high strain rate out-of-plane compression testing.						
10:30	UNBALANCED AND SYMMETRIC LAMINATES: NEW	FINITE ELEMENT ANALYSIS OF DELAMINATION	THE EFFECT OF DECONSOLIDATION ON						
	PERSPECTIVES ON A LESS WELL-KNOWN DESIGN	GROWTH WITH FRACTURE RESISTANCE DEPENDENT ON MIXED-MODE RATIO AND FIBER ORIENTATION	INTERLAMINAR SHEAR STRENGTH FOR THERMOPLASTIC COMPOSITES						
	Christopher B. York(University of Glasgow)	Atsushi Kondo(Tokyo Metropolitan University), Yasuhito	Markus Brzeski(Institut fur Verbundwerkstoffe GmbH), Peter Mitschang(Institut fun Verbundwerkstoffe GmbH)						
		wikanių rokyo Metropolitan University)	winschang(institut fuer verbundwerkstone GmbH)						
	m 1, 66 11, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1,		* 1 1 . 1						
	The last of four very special laminate classes, decoupled between extension and bending behavior; as would be expected from	A numerical technique to analyze the mixed mode delamination crack growth by using cohesive zone model is proposed based on	in order to get a deeper knowledge on the effect of deconsolidation on the interlaminar behavior, many different						
	symmetric laminate configurations.	the local coordinate system based on the calculated crack shape.	materials were investigated in respect to thickness increase and						
			interlaminar strength.						
10.50		1	BREAK						
10.50			DREAN						

	Room 515	Room 519a	Room 514	Room 524ab	Room 524c
10:50			BREAK		
	CARBON, NANOTUBES & GRAPHENES Chairs: Behnam Ashrafi, Yadienka Martinez Rubi		APPLICATIONS 10 Chair: Wanping Zheng		
11:10	HIERARCHICHAL COMPOSITES WITH PRESERVED CARBON FIBER STRENGTHS		LIGHTNING STRIKE PROTECITON FOR COMPOSITE LAMINATES BY PITCH BASED CARBON FIBER SKIN		
	Richard Li(Massachusetts Institute of Technology), Peter Fiorin(Massachusetts Institute of Technology), Stephen Alan Steiner(Massachusetts Institute of Technology), Brian Wardle(Massachusetts Institute of Technology) Carbon nanotubes are grown on carbon fibers without reducing fiber strength, thus preserving in-plane mechanical properties of hierarchical composites. Single fiber and ply-level testing are		Norihiko Hosokawa(Mitsubishi Plastics Inc.), Teruo Ooto(Mitsubishi Plastics Inc.), Shinya Kubo(Mitsubishi Plastics Inc.), Anzai Anzai(Mitsubishi Plastics Inc.), Akira Nakagoshi(Mitsubishi Plastics Inc.), Akihko Yoshiya(Mitsubishi Plastics Inc.) Lightning strike protection for composite laminates by carbon fiber skin was researched. Because of its high thermal and electrical conductivity, pitch based carbon fiber skin seems to be		
	discussed		effective.		
11:30	MECHANICAL PROPERTY OF CARBON NANOTUBE YARN REINFORCED EPOXY		EXACT BUCKLING SOLUTION OF COMPOSITE WEB/FLANGE ASSEMBLY		
	Yoshinobu Shimamura(Shizuoka University), Kahori Oshima(Shizuoka University), Keiichiro Tohgo(Shizuoka University), Tomoyuki Fujii(Shizuoka University), Yoku Inoue(Shizuoka University) Tensile tests of CNT spun yarn reinforced epoxy were conducted and mechanical properties were obtained to investigate the mechanical behavior of CNT spun yarn reinforced composite.		Jeremie Sauve(École de technologie supérieure - Université du Québec), Martine Dube(École de technologie supérieure - Université du Québec), Guillaume Corriveau(Bombardier), Franck Dervault(Bondan Software Corporation) In this work, the case of a composite frame made of a web and flange is discussed, taking into account a clamped boundary condition between the web and the fuselage skin.		
11:50	ROLL-TO-ROLL MANUFACTURING OF CARBON NANOTUBE FORESTS ON METAL FOILS		APPLICATION OF FOAM CORE TO CFRP SANDWICH MIRRORS FOR SPACE TELESCOPES		
	Erik Shaun Polsen(University of Michigan - Ann Arbor), A. john Hart(University of Michigan - Ann Arbor)		Shun Honda(Tokyo University of Science), Masashi Ishikava(Tokyo University of Science), Yasuo Kogo(Tokyo University of Science), Tomohiro Kamiya(Japan Aerospace Exploration Agency), Shin Ulusunomiya(Japan Aerospace Exploration Agency)		
	A prototype system for roll-to-roll carbon nanotube forest manufacturing is presented, combining continuous-feed evaporative assembly of catalyst particles, and a novel concentric tube reactor.		In this study, we measured the surface roughness and out-of- plane deformation shape of foam core CFRP sandwich mirrors at dry and humid condition.		
12:10	SCALABLE PRODUCTION OF EPOXY BASED NANOCOMPOSITES AND HIERARCHICAL COMPOSITES WITH VERY HIGH CNT LOADINGS				
	Tomi Herceg, Mohd shukur Zainol abidin, Emile Smith Greenhalgh, Alexander Bismarck, Milo S p Shaffer(Imperial College of Science), Clara Delfour(Institut Catholique d'Arts et Metiers Lille)				
	A scalable, powder based processing route was developed to manufacture CNT composites. Microstructure homogeneity was controlled by altering processing parameters, resulting in improved properties.				
12:30					
12:50			End		1

	Room 522	Room 518ab	Room 520ad	Room 519b	Room 520c
10:50			BREAK		
		JOINTS 2 Chairs: Yasutomo Nomura, Eric Pomerleau	EXPERIMENTAL TECHNIQUES 3 Chairs: Pascal Hubert, Andrew Johnston	PLEASE NOTE THAT THE BELOW SESSION WILL BE THE 5th PAPER IN FRIDAY-SESSION 1 STARTING AT 10:50	COMPOSITE IN CIVIL INFRASTRUCTURES 2 Chairs: Urs Otto Meier, Marciej Wozniak
11:10		PULL-OFF TEST AND SIMULATION OF DUCTILE ADHESIVE BONDED CONPOSITE T-JOINTS	HYBRID TESTING OF COMPOSITE STRUCTURES WITH SINGLE-AXIS CONTROL	TITANIUM NANO COMPOSITES USING HYDROGENATED METHOD	COMPRESSIVE BEHAVIOUR OF CONCRETE CYLINDER CONFINED BY NATURAL FIBER REINFORCED POLYMER SHEET
		Hao Cui(Delft University of Technology), Sotiris Koussios(Delft University of Technology), Yulong Li(Northwestern Polytechnical University)	Jacob Paamand Waldbjoern, Jacob Høgh, Henrik Stang, Christian Berggreen, Jacob Wittrup-schmidt, Kim Branner (Technical University of Denmark)	M.Bardet (Université Bordeaux), A. Veillere (Université Bordeaux), J.L.Bobet (Université Bordeaux), J.M. Heintz (Université Bordeaux), K.Xia (University of Melbourne), J.F.Silvain (Université Bordeaux)	Guijun Xian(Harbin Institute of Technology)
		The effect of adhesive ductility on the failure process of composite T-joint was revealed through experiments, which was incely predicted with finite element model using novel traction- separation law	A hybrid testing platform has been developed. The platform is capable of running a hybrid test of a composite structure loaded in three point bending.	TH2 powder is mixed with TiC or TiB2 nanometric powder and then sintered at 1400° C for 4 hours under UHV. The dehydrogenation of TiH2 leads to a rapid sintering, and get a fully dense materials.	Natural fiber (flax) fabrics with a room temperature curable epoxy resin were used to wrap a plain concrete cylinder. The compressive behaviors of the confined cylinder were dramatically enhanced.
11:30		OPTIMAL DESIGN OF THE EPOXY ADHESIVE JOINTS WITH CORE-SHELL STRUCTURED META-ARAMID/EPOXY NANOFIBER AT CRYOGENIC ENVIRONMENT	MULTI AXIS MACHINING OF HIGH PERFORMANCE CFRP FOR AEROSPACE INDUSTRY		HYGROTHERMAL AGEING AND CREEP BEHAVIOR OF GLASS FIBER REINFORCED POLYMER COMPOSITES
		Hyun ju Oh(Chonbuk National University), Da hye Kim(Chonbuk National University), Hakyong Kim(Chonbuk National University), Hui yun Hwang(Andong National University), Scong su Kim(Chonbuk National University) The ontimal design narameters with corre-shell structured	Seyedbehzad Ghafarizadeh(École de technologie supérieure - Université du Québec), Jean-françois Chatelain(École de technologie supérieure - Université du Québec), Gilbert Lebrun(University of Quebec at Trois-Rivieres) This research focuses on the effects of different cutting		Guijun Xian(Harbin Institute of Technology), Yang Yuqiu(Donghua University, Shanghai), Hiroyuki Hamada(Kyoto Institute of Technology), Eisuke Fukui(Fukui Fibertech Co. Ltd.) A elass fiber reinforced nohmer nine was studied on the water
		nanofibers on adhesive joints for cryogenic environments were suggested based on the experimental results and verified using FE-analysis.	parameters such as feed rate, cutting speed, and lead angle on cutting forces and surface roughness in CFRP machining.		uptake and flexural performance when immersed in water. The creep performance of the GFRP pipe was also conducted in the north of China.
11:50		FRACTURE MECHANISM OF MECHANICALLY FASTENED CFRTP	USING THE LAP-SHEAR TEST TO MEASURE POLYMER COMPOSITE INTERFACIAL STRENGTH		PRESTRESS LOSS MONITORING OF NEAR-SURFACE MOUNTED CFRP STRIPS EMBEDDED IN CONCRETE BASED ON OFBG SENSORS
		Kotaro Shinohara(The University of Tokyo), Jun Takahashi(The University of Tokyo), Kiyoshi Uzawa(Kanazawa Institute of Technology), Hideaki Murayama(The University of Tokyo), Isamu Ohsawa(The University of Tokyo)	Jeff Wood(University of Western Ontario), Ian N Swentek(University of Western Ontario)		Chuan Wang(Harbin Institute of Technology), Lijuan Cheng(University of California, Davis)
		This paper presents an experimental investigation of the relationship between the bearing strength and the damage progress behavior in mechanically fastened composite structures.	A new test method for the determination of matrix/reinforcement interfacial properties is described. Results for a glass/epoxy and a glass/polyester system are presented.		The OFBG technique is applied to monitor the prestress losses in a series of reinforced concrete beams strengthened with NSM CFRP strips pre-tensioned by a newly developed prestressing device.
12:10		AN ANALYTICAL MODEL TO IMPROVE THE EFFICIENCY OF NUMERICAL ANALYSES OF COMPOSITE BOLTED LAP JOINTS SUBJECTED TO HIGH RATES OF LOADING	EFFECT OF SUPERHEATED STEAM TREATMENT ON TENSILE STRENGTH OF CARBON FIBER AND FIBER- RESIN INTERFACIAL SHEAR STRENGTH		DESIGN AND STRUCTURAL FEASIBILITY STUDY OF A LIGHTWEIGHT FLOOR SYSTEM FOR RENOVATION
		Philip Anthony Sharos(University of Limerick), Conor T. Mccarthy(University of Limerick)	Masashi Wada, Kazuhiko Kawai, Kazumi Hayashi, Satoshi Kitaoka (Japan Fine Ceramics Center), Yuta Shimizu(Daido University), Tomoyuki Suzuki (Aichi Science and Technology Foundation), Hirohito Hira (Daido University)		Sven De sutter(Vrije Universiteit Brussel), Tine Tysmans(Vrije Universiteit Brussel), Olivier Remy(Vrije Universiteit Brussel)
		An analytical was developed for the efficient finite element analysis of composite bottel joints at high loading rates. The model was validated against high-rate joint test data.	The treatment of carbon fiber with superheated steam containing N2 gas was effective in improving the shear strength of fiber-epoxy resin interface.		This paper describes a new floor concept, composed of a smart combination of concrete and composites. At the end, the results of a preliminary structural feasibility study are shown.
12:30		ON THE PROLIFERATION OF STANDARD TESTS FOR COMPOSITE BEARING STRENGTH			DURABILITY OF STEEL-CFRP ADHESIVE JOINTS UNDER SUSTAINED LOADING AND WET THERMAL- CYCLE
		Adam John Sawicki(The Boeing Company)			Ankit Agarwal(University of New South Wales), Tian Sing Ng(University of New South Wales), Ehab Hamed(University of New South Wales), Stephen J Foster(University of New South Wales)
		This paper will review test methods for composite bearing strength, provide guidance on test selection and recommend improvements to industry standards.			Influence of combined effects of thermal and mechanical loading on the bond strength of steel-CFRP single lap joints are investigated using experimental testings and theoretical modelling.
12:50			End		

	Room 525	Room 520f	Room 520be	Room 516ab
10:50			BREAK	
	STRUCTURAL RESPONSE & DESIGN 2	INTERFACE 9		
	Chairs: Rajamonan Ganesan, Dineshkumar Harursampath	Chair: Iosif Daniel Rosca		
11:10	DAMAGE ACCUMULATION IN A FIBER REINFORCED	INTERFACE DESIGN OF 3D WIRE STRUCTURES FOR		
	COMPOSITE FOR SPACE APPLICATIONS	METAL MATRIX COMPOSITES		
	Jihane Ajaja(McGill University), Francois Barthelat(McGill	Steffen Kaina(Technische Universitat Dresden), Bernd		
	University)	Universitat Dresden), Olaf Andersen(Fraunhofer IFAM Dresden), Günter		
		Stephani(), Eva Kieselstein(), Andreas Bascha()		
	We investigated the performance of a carbon fiber reinforced	This work presents results with regard to the manufacturing of a		
	cyanate ester composite for space applications, focusing on the accumulation of damage from extreme thermal and externally	material bond between carbon steel wires and a magnesium		
	applied stresses	alloy matrix.		
11:30	RESISTANCE OF NICKEL-COATED THERMALLY CYCLED COMPOSITES TO LUNAR DUST ABRASION	NOTCHED-BUTT TEST FOR THE DETERMINATION OF ADHESION STRENGTH AT BIMATERIAL		
		INTERFACES		
	Maria in ta Patria (Anna analisha ana diana Caradian Sara	Read Leader Libric Libric Columnation dama Decider		
	Agency), Francis Martin(Agence spatiale canadienne Canadian Space	e.V.), Alberto Barroso(Universidad de Sevilla)		
	Space Agency)			
	Composites are highly abraded by lunar dust. Composites	A notch at the interface of a bimaterial joint prevents stress		
	samples coated with a nickel alloy have been subjected to	singularities. Calculations provide notch geometry appropriate		
	impingement by simulant of lunar dust and have shown very	for uniform stresses as the basis for adhesion strength		
	good resistance to abrasion.	determination.		
11:50	EFFECT OF EXTREME TEMPERATURE CYCLES ON	TENSILE PROPERTIES OF PAN- AND PITCH-BASED		
.0.	DAMAGE IN COMPOSITE LAMINATES	HYBRID CARBON FIBER REINFORCED EPOXY MATPLY COMPOSITES		
		MATRIX COMPOSITES		
	Marie-laure Dano(Laval University), Francis Martin(Agence spatiale	Kimiyoshi Naito(National Institute for Materials Science)		
	spatiale canadian Space Agency), Marie-Josee Potvin(Agence spatiale canadianne Canadian Space Agency), Mathilde Jean-st-			
	laurent(Laval University)			
	Thermal cycles were performed on carbon/cyanate ester	The tensile properties of PAN- and pitch-based hybrid carbon fiber reinforced enouv matrix composites were investigated. The		
	quantified and mechanical tests were performed to evaluate	tensile stress-strain curves of hybrid specimens show		
	material property degradation.	complicated shape.		
	TENCH E CTRENCTH MODELING OF CLASS EIDER	IMDDOVEMENT OF INTEDEACIAL SHEAD STRENGTH		
12:10	POLYMER COMPOSITES AND SANDWICH	USING ELECTROSTATICALLY DEPOSITED NANO-		
	MATERIALS IN FIRE	PARTICLES		
	Stefanie Feih(Royal Melbourne Institute of Technology), Aslina	Benjamin Rutz(University of Washington), John C		
	Anjang(Royal Melbourne Institute of Technology), Venkata Chevali(Royal Melbourne Institute of Technology), Europa Kandara Pourl Melbourne	Berg(University of Washington)		
	Institute of Technology), Adrian Mouritz(Royal Melbourne Institute of			
	The failure behavior is compared for a GFRP laminate and	Poly(ethyleneimine) functionalized silica nano-particles were		
	sandwich material under tensile loading during fire. The balsa	bound to glass fibers to increase the toughness and modulus of		
	low loads.	the interphase, increasing the interfactar sitear strength.		
12:30	STRUCTURAL OPTIMISATION OF DISCONTINUOUS	NUMERICAL APPROACH FOR EFFECTIVE PROPERTIES OF WOOD COMPOSITES WITH		
		PARTIAL RESIN COVERAGE OF STRANDS		
	Connia Chong Qian(University of Nottingham) J Th	Sardar Malekmohammadi(University of British Columbia) Ponjamin		
	Harper(University of Nottingham), Thomas Turner(University	Tressou(Institut Pprime CNRS ISAE-ENSMA), Carole Nadot-		
	of Nottingham), Nicholas Warrior(University of Nottingham)	martin(Institut Pprime CNRS ISAE-ENSMA), Fernand Ellyin(University of British Columbia), Reza Vaziri(University of British Columbia)		
	A stiffness optimisation model is developed to determine the	Based on full-field finite element simulations, a numerical		
	fibre architecture of discontinuous carbon fibre components and	approach is presented for determining the effective properties of		
	facilitate the downstream modelling for fibre deposition routes.	strands that are partially bonded with a thin layer of resin.		
12:50		•	End	

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ASKELAND	PER	Th-520f-3-5	BARBULÉE	ANTOINE	Mo-520ad-1-4	
ASP	LEIF ERIK	Th-519a-3-1 We-52obe-3-2 Th-519a-4-2 Th-519a-4-3	BARBURSKI	MARCIN	Tu-524c-1-2	
ASTON	ERIC	Tu-518ab-3-6	BARDET	М.	Fr-519b-2-1	
ATASHIPOUR	SEYED RASOUL	Tu-516ab-3-3	BARFKNECHT	PETER W.	Tu-518ab-3-2	
ATTIA	HELMI	Th-520ad-3-4 Th-520ad-3-5 Th-520ad-3-6	BARNHART	RYAN MICHAEL	We-514-1-3	
ATTWOOD	JULIA PATTON	We-525-4-2	BARNONCEL	DAVID	Tu-525-4-1	
AU	PETER	Mo-515-1-1	BARON	WILLIAM G	Tu-519a-4-2	
AUBRY	JULIEN	We-525-1-4	BARRAL	LUIS	Mo-516ab-4-2	
AUDEBERT	FERNANDO	Th-519b-2-1	BARRERA	NELSON EDUARDO	Mo-520be-2-4	
AURELI	MATTEO	Tu-514-3-1	BARROSO	ALBERTO	Th-524ab-3-6 Fr-520f-2-2	
AVACHAT	SIDDHARTH	Mo-514-2-4	BARTHELAT	FRANCOIS	Fr-525-2-1 We-520f-2-2 Mo-5	;25-3-6
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BATRA	ROMESH	Mo-514-2-3	BERGLUND	LARS A.	Th-515-4-3 Mo-525-3-5
BATTLEY	MARK	Mo-514-3-5	BERNASCONI	ANDREA	Mo-524ab-1-3 Mo-520f-1-1
BAUGHMAN	RAY HENRY	Mo-519a-4-1	BERNHART	GÉRARD	We-515-1-2 We-516ab-1-2
BAUR	JEFF W	Mo-519a-3-1 Mo-520c-1-3	BERTELS	ELLEN	Tu-524ab-1-1
BAUR	JEFFERY W.	Mo-519a-3-1	BERTHEL	BRUNO	We-520c-3-1 We-514-3-4
BAUR	MICHAEL	We-519a-2-4	BERTHET	FLORENTIN	Tu-516ab-3-4
BAYRAKTAR	HARUN	We-522-3-2 Tu-524c-3-6	BESSARD	EMELINE	We-516ab-1-2
BAZER-BACHI	ROBERT	We-520c-2-2	BETTINI	PAOLO	Tu-524ab-3-4
BEAUSON	JUSTINE	Mo-520be-4-1	BEYENE	ALEM TEKALIGN	We-519b-1-1
BEBLO	RICHARD V	Mo-519a-2-2	BEZMELNITSYN	ALEXANDR VIKTOROVICH	Tu-516ab-1-11
BECH	JAKOB ILSTED	Mo-520be-4-1	BHATTACHARYYA	DEBES	Mo-520be-1-1 Th-515-2-1
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BECKER	DAVID	Th-518ab-2-3 Mo-518ab-3-5	BIELAWSKI	MARIUSZ	Mo-515-1-1
BEG	MOHAMMAD DALOUR	Mo-520ad-3-4	BIENIAS	JAROSLAW	We-516ab-4-17
BEHM	MÅRTEN	Th-519a-3-3	BIERNACKI	MARK	Tu-516ab-2-1
BEIER	UWE	Mo-524c-1-3	BILGEN	ONUR	We-520f-1-4
BEL	SYLVAIN	Mo-524c-1-3	BILLOTTE	CATHERINE	Tu-518ab-3-1 Mo-519b-2-2
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BELLINI	COSTANZO	Tu-516ab-4-10	BINETRUY	CHRISTOPHE	Tu-518ab-1-3
BELOTTI	PAOLO	Tu-524ab-3-4	BINGEMANN	PATRICK	We-516ab-1-17
BEN	GOICH	Th-518ab-3-1 Th-518ab-4-1 Mo-520f-3-3	BIRMAN	VICTOR MARK	Tu-520c-3-1
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BENICEWICZ	BRIAN C	Tu-520c-2-4			We-520be-3-7 We-520be-3-8
BENJAMIN	OSTRE	We-525-2-2	BISTAC	SOPHIE	Tu-516ab-1-13
BENKHELIFA	AMEUR	Th-516ab-1-6	BISWAS	SHAURJO	Tu-519a-1-2
BENSADOUN	FARIDA	Mo-520ad-1-3	BITTMANN	BIRGIT	Mo-516ab-4-2
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BERGERET	ANNE	Mo-520be-1-4	BLANCHFIELD	JAMIE PETER	Th-524ab-2-4
BERGGREEN	CHRISTIAN	Tu-516ab-1-8 Fr-520ad-2-1 Th-525-2-4 Tu-514-3-3 Tu-514-3-2	BLANCO	NORBERT	Th-525-4-4
		We-520be-4-2	BLASZCZYK	JAN ALEXANDER	Th-514-3-5

BLAZQUEZ	ANTONIO	We-520be-1-3	BOUGHERARA	HABIBA	Tu-515-4-2 We-524ab-1-1 Mo-516ab-2-12
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BLOM	JOHAN	Tu-524c-4-5	BOUILLONNEC	JONATHAN	Th-515-1-1
BLOMQVIST	PER	Mo-519b-2-1	BOUKERROU	AMAR	Mo-520ad-4-5
BLOOM	LEO DOMINIC	We-518ab-3-1 We-518ab-3-2	BOULANGHIEN	MAXIME	Mo-516ab-3-4
BOBET	JEAN-LOUIS	Th-519b-4-5	BOURMAUD	ALAIN	Mo-520ad-4-5
BOBET	J.L.	Fr-519b-2-1	BOURNE	ORSON	Th-519b-2-4
BOCHYNEK	RALPH	Th-516ab-1-3	BOUSLAH	MOUNIA	We-514-3-4
BOCQUET	MICHEL	We-516ab-4-13	BOUSSU	FRANÇOIS	Tu-520f-3-4
BOCZKOWSKA	ANNA	Mo-515-3-6	BOUZA	REBECA	Mo-516ab-4-2
BOEGLE	CHRISTIAN	Mo-524ab-3-6 Th-525-3-4	BOWLAND	CHRISTOPHER	Tu-519a-1-3
BOELKE	JENS	We-516ab-1-11	BOYARD	NICOLAS	Mo-518ab-1-2
BOGNET	BRICE	We-520be-2-3	BOYD	STEPHEN	Tu-518ab-1-1
BÖHLKE	THOMAS	We-522-2-2	BRABANDT	DANIEL	We-516ab-1-17
BOIS	CHRISTOPHE	We-516ab-2-3	BRACK	ALEXANDER	Mo-525-1-2
BOISSE	PHILIPPE	Mo-524c-1-2 We-518ab-1-3 Tu-518ab-3-4 Tu-520f-3-1	BRAGINSKY	MICHAEL	Th-524c-2-2
BOLDUC	MANON	Mo-515-1-1	BRAILOVSKI	VLADIMIR	Mo-519a-2-3
BOMAN	ROMAIN	Mo-520c-3-4	BRANDS	DAVE	Mo-522-1-1
BOND	IAN P	We-519a-1-3	BRANKE	DOMINIK	Th-520be-4-3
BONIECKI	MAREK	Th-524c-3-5	BRANNER	KIM	Fr-520ad-2-1
BONNEMAINS	THOMAS	Mo-518ab-3-6	BRÉARD	JOËL	Mo-518ab-1-2 Mo-520ad-1-4
BONNER	MARK	Th-522-2-3	BRECHER	CHRISTIAN	Mo-525-1-2 We-518ab-3-3 We-520ad-4-2
BORIA	SIMONETTA	We-525-4-4	BREITZMAN	TIMOTHY D	Tu-522-3-6
BORSTNAR	GREGOR	We-520c-4-1	BREUER	ULF PAUL	Mo-519a-2-4
BORTOLOTTI	PIETRO	We-520be-4-2	BRIELAND-SHOULTZ	ANNA CHRISTINE	Tu-515-1-1 Mo-515-1-2
BOSE	ARIJIT	Mo-515-1-3	BRIGGS	TIMOTHY	We-524ab-2-4
BOTELHO	EDSON COCCHIERI	Th-516ab-1-7 Mo-516ab-1-10	BRINKMEYER	ALEX W	Tu-525-2-1
BOTEZ	RUXANDRA	Mo-516ab-1-7	BRISCOE	JAMES SEABURY	Mo-514-3-4
BOTSIS	JOHN	Tu-522-1-3 We-524ab-2-2	BRODERICK	J.	Th-518ab-3-6
BOTTECCHIA	SÉBASTIEN	We-516ab-3-1	BROGLY	MAURICE	Tu-516ab-1-13 We-520f-2-3
BÖTTGER	TONI	Th-514-2-4	BRØNDSTED	POVL	Mo-520be-4-1
BÖTTGER-HILLER	FALKO	Th-514-2-4	BROUZOULIS	JIM	We-519b-3-2
BOUAMOUL	AMAL	Th-516ab-1-6	BROWN	NICHOLAS W A	Th-520be-1-4
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BRUNNER	ANDREAS J.	Tu-519b-4-1	CARBILLET	STANI	Mo-520f-1-4
BRYLKA	BARTHEL	We-522-2-2	CARDONNE	MARTIN	Mo-520ad-4-4
BRYSKIEWICZ	ANNA	Th-516ab-3-9	CAREY	JASON P	Mo-520f-4-4
BRZESKI	MARKUS	Fr-520be-1-4 Mo-518ab-3-5	CARLSON	DALE RICHARD	Th-519b-3-1
BUDIMAN	BENTANG ARIEF	Tu-524ab-1-4	CARLSON	TONY	Th-519a-3-1 Th-519a-4-2
BUECKLE	JOHANNES	We-524C-1-1	CARLSSON	LEIF A	Tu-514-3-3 Tu-514-3-2
BUEHLER	MARKUS	No Code	CARMIEL	YACOV	We-520f-3-1
BULAT	MARTINA	Mo-524c-4-4	CARNEGIE	SCOTT JOSEPH	Tu-516ab-2-1
BULENT ERSOY	NURI	Tu-515-4-3	CARRA	GUGLIELMO	Fr-520c-1-3
BULL	DANIEL J	We-520c-4-1 We-520c-4-4	CARRARO	PAOLO ANDREA	Tu-519b-4-2
BUN	KOICHI	Fr-520f-1-3 We-516ab-1-5 Th-518ab-4-2	CARRERE	NICOLAS	Tu-522-1-2
BUNSELL	ANTHONY R.	Mo-524ab-2-3 Th-524ab-4-3	CARREYETTE	SHUAIJIN	Mo-520f-2-1
BURKHART	THOMAS	Th-515-4-5	CARVELLI	VALTER	Fr-520c-1-3 Mo-524c-3-1
BÜRKNER	FALKO	We-520be-4-1	CASARI	PASCAL	Th-516ab-1-14
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BURT	MARK	Th-524ab-1-4	CASTAINGS	MICHEL	Th-520c-2-1
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CADORIN	NICOLAS	We-518ab-4-1	CASTELLANOS	SEBASTIAN	Mo-520be-2-4
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CAI	XIAO	Tu-525-1-3	CASTER	WILLIAM	Tu-516ab-4-4
CALLENS	MICHAËL GUY	Tu-524ab-1-1	CASTRO	BRUNO FRANCISCO	Mo-516ab-3-2
CAMANHO	PEDRO P.	Tu-516ab-3-7 Tu-524c-4-3	CATALANOTTI	GIUSEPPE	Tu-524c-4-3
CAMINO	GIOVANNI	Mo-519b-2-1	CATER	CHRIS	We-519b-2-2
CAMPI	FRANCESCA	We-525-1-1 Mo-514-4-2	CATON-ROSE	FIN	Th-520c-4-1
CAMPS	THIERRY	Th-518ab-3-2	CATTIN	CYRILL	Th-519a-2-4
CANFIELD	ROBERT A	Tu-519a-4-2	CAUSSE	PHILIPPE	Mo-518ab-4-3 Mo-518ab-3-1
CANO	ROBERTO J.	We-514-2-1	CAUVIN	LUDOVIC	Th-520f-4-2
CANOU	JOSEPH	We-516ab-3-1 We-520ad-3-4	CAYZAC	HENRI-ALEXANDRE	Th-524ab-3-1
CANTURRI	CARLA	We-524ab-1-4	CELLARD	CHRISTOPHE	Mo-524c-1-4
CANTWELL	WESLEY JAMES	Mo-522-2-2 Tu-522-2-4 Mo-522-2-3 Mo-522-3-4	CENDER	THOMAS ANTHONY	Mo-520c-3-5
CAPELLARO	MARC	Tu-519b-2-3	CENTEA	TIMOTEI	Tu-518ab-4-4
CAPRINO	GIANCARLO	We-525-1-2 Mo-514-4-3	CHAÂBANE	NIHED	Th-520f-3-3

CHAALA	ABDELKADER	Tu-515-1-2 Mo-516ab-3-6	CHEN	JIYE	We-516ab-4-3
CHAALLAL	OMAR	Mo-524ab-4-4	CHEN	LAWSON	Th-516ab-3-7
CHADHA	REEWANSHU	Th-514-1-3	CHEN	PEICHI	Mo-516ab-1-6
CHAEICHIAN	SINA	Th-515-2-2	CHEN	XIAOTONG	Th-516ab-3-7
СНАН	KARIMA	Mo-522-4-1	CHEN	XIUHUA	Tu-516ab-3-13
CHAILAN	JEAN-FRANCOIS	We-520f-3-3	CHEN	YAN	We-518ab-2-3
CHAKRABORTY	INDRANI	Mo-515-1-3	CHEN	YU	We-524ab-4-4
CHALLAGULLA	KRISHNA S	Tu-520c-3-2 Tu-520c-3-3 Tu-516ab-4-13	CHEN	YUEHUA	We-519b-4-4
CHANG	FU-KUO	Tu-519a-3-1	CHEN	ZENGTAO	Tu-520c-2-2
CHANG	TING-YU	Th-516ab-2-11	CHEN	Ү.	Tu-519a-3-3
CHARALAMBIDES	MARIA	We-524ab-2-3	CHENG	GUANG	Tu-520c-1-4
CHARALAMBOUS	GEORGIA	Tu-519b-2-4	CHENG	LIJUAN	Fr-520c-2-3
CHARD	JONATHON	Tu-520be-1-3	CHENG	QUNFENG	We-516ab-2-8
CHARETTE	ÉMILIE	Mo-519b-2-2	CHENG	XIAOQUAN	We-516ab-2-8
CHARMETANT	ADRIEN	Mo-524c-1-2	CHEN-KEAT	TERESA	We-520ad-2-2
CHARRON	JEAN-FRANÇOIS	We-520be-3-1	CHEONG	S.	We-516ab-2-12
CHASIOTIS	IOANNIS	Tu-519a-2-3	CHERIF	CHOKRI	Mo-524c-2-3
CHATELAIN	JEAN-FRANÇOIS	Th-518ab-1-2	CHEUNG	MOE M S	We-525-2-4
CHATTOPADHYAY	ADITI	Mo-515-3-5	CHEVALI	VENKATA	Fr-525-2-4
CHATZIMICHALI	ANNA	We-518ab-3-1 We-518ab-3-2	CHIANG	FU-PEN	Tu-514-1-3 Tu-514-1-4
CHAUDHARI	RAMAN	Mo-518ab-3-2	CHIANG	YU-CHUN	Th-515-1-4
СНЕІКН	MOHAMMED	We-515-1-2	CHIARUTTINI	VINCENT	Tu-524c-2-4
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CHEN	YONGSHEN	Mo-519a-4-1	CHLUP	HYNEK	Mo-520f-1-2
CHEN	WUJUN	Tu-516ab-1-5	СНО	В.	Tu-519a-3-3
CHEN	BO YANG	Tu-522-4-3 Tu-522-4-2	СНО	DONGHWAN	Mo-520ad-2-3
CHEN	CHENG	Th-522-3-3	СНО	HYUN-JUN	Th-525-3-2
CHEN	HAORAN	Th-524ab-2-2	СНО	KYU-JIN	Tu-525-1-1 Tu-516ab-4-1
CHEN	HSIN-PIAO	Mo-522-1-3	СНО	MAENGHYO	Tu-525-1-1 Tu-516ab-3-9 Th-520f-4-5 Th-520f-4-4 Tu-516ab-4-1
CHEN	JEREMY	Mo-520be-1-1	СНО	SUNG-WOO	Mo-525-1-4
CHEN	JIENG-CHIANG	Mo-520be-3-4	СНО	YOUNG-HEE	Th-519b-3-3
CHEN	JIHUA	We-520ad-2-2	CHOI	IK-HYEON	We-516ab-4-12
CHEN	JINGFEN	We-519b-3-1	CHOI	JOONMYUNG	Th-520f-4-5 Th-520f-4-4
CHEN	JINXIANG	Mo-516ab-1-11	CHOI	NAK-SAM	Mo-525-2-4

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CHOI	YEONG OG	Tu-520c-1-2	Th-520f-3-6	Th-525-3-2	We-516ab-3-8	COURTEAU-GODMAIRE	HUBERT	Mo-518ab-1-3		
CHOI	I.	We-516ab-4-12				CRAUWELS	LIESBET	Th-520be-2-2		
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CHRISTMANN	MARCEL	Th-520be-3-5				CREPIN	DAVID	Tu-520f-3-1		
CHUNG	CHANHOON	We-516ab-4-12				CREVEL	JEREMY	Tu-516ab-3-4		
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CICHOSZ	JOERG	We-524c-1-1				CROSKY	ALAN	Mo-524ab-3-4		
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CIMINI	CARLOS ALBERTO JR	Mo-522-4-3	Tu-525-4-2			CROUZEIX	LAURENT	Mo-522-4-1	Tu-520be-1-2	We-520c-2-2
CIOFFI	SALVATORE	Th-525-2-2				CRUMP	DUNCAN ANDREW	Th-525-2-4		
CISSE	OUSSEYNOU	Mo-520ad-1-2				CRUPI	VINCENZO	Th-525-1-3		
COJUTTI	MASSIMO	Mo-518ab-2-2				CUGNONI	JOËL	Tu-522-1-3		
COLE	RICK	Mo-519b-4-5				CUI	HAO	Fr-518ab-2-1		
COLLOMBET	FRANCIS	We-520c-2-2	Mo-522-4-1	We-518ab-4-1	Tu-520be-1-2	CUI	XIPING	Th-519b-2-2		
COMAN	FLOREANA	We-520be-4-3				CUI	ZHENJIN	Mo-516ab-3-5		
COMER	ANTHONY JOHN	We-520ad-3-3				CUILLIERE	JEAN-CHRISTOPHE	Mo-519b-2-3		
CONGCONG	GUO	We-520f-2-1				CUNNINGHAM	PAUL	Tu-524c-1-3		
CONRADO	EDOARDO	Mo-520f-1-1				CURADO-CORREIA	NUNO	Mo-524c-3-4		
CONTESSE	GÉRALD	Tu-516ab-4-3				CUTARD	THIERRY	Mo-520c-3-1		
COOMER	RICHARD	Mo-520c-1-3				CZEL	GERGELY	Tu-524ab-2-4		
COOPE	TIM S	We-519a-1-3				CZICHON	STEFFEN	Mo-520f-2-3		
COPIC	DAVOR	Mo-519a-3-4	Mo-519a-3-5			CZIGANY	TIBOR	Mo-520be-3-1		
COPPOLA	ANTHONY M	We-519a-2-1				DACAL	RAFAEL BUREO	Th-514-3-3		
CORDNER	BRENT	Th-520be-3-2				DAHL	JAN	Tu-519b-4-4		
CORN	STEPHANE	Th-522-1-1				DAI	CHENGQIN	Th-520ad-3-1		
COROLLER	GUILLAUME	Mo-520be-1-2				DAI	FUHONG	Tu-516ab-4-12		
CORREA	ELENA	Th-524ab-3-6				DAI	JIXIANG	Tu-515-1-3		
CORRELL	NIKOLAUS	Mo-519a-3-3				DAI	SHUO	Tu-524c-1-3		
CORRIVEAU	GUILLAUME	Fr-514-2-2				DALIR	HAMID	Th-522-4-4		
COSSON	BENOIT	We-518ab-1-2				DALLMEIER	STEPHANIE	Mo-522-1-4		
COSTA	JOSEP	Th-525-4-4				DAMATO	CESAR AUGUSTO	Th-516ab-1-7		
COSTACHE	ANDREI	Tu-516ab-1-8				DAMODARAN	AJITH	Th-514-4-4		
COUÉGNAT	GUILLAUME	Tu-524c-1-1	Th-524c-1-3			DANCILA	STEFAN	We-520f-1-3		

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DANGORA	LISA	Mo-524c-3-3 Mo-524c-4-1	Mo-524c-4-3	DEL MENEZZI	CLAUDIO HENRIQUE	Tu-520ad-3-2		
DANIEL	CLAIRE	Mo-518ab-1-1		DELAUNAY	DIDIER	Mo-518ab-1-2		
DANIEL	ISAAC M	Mo-514-1-3		DELEGLISE	MYLENE	We-518ab-1-2		
DANO	MARIE LAURE	Th-516ab-1-6 Fr-525-2-3		DELEON	NATHANIAL E	Mo-519a-2-2		
DANO	MARIE-LAURE	Fr-525-2-3		DELFOUR	CLARA	Fr-515-2-4		
DAO	BUU	Fr-525-1-1		DELL'ANNO	GIUSEPPE	We-524c-2-1		
DAS	RAJ	Th-525-2-3		DEMARIA	CRISTIAN	Mo-518ab-4-2	Mo-520be-3-2	
DAS	SUMAN	Th-519a-2-1		DEMIRCAN	OZGUR	Th-525-4-1		
DAS CHAKLADAR	NILANJAN	Mo-524c-2-4		DENAND	BENOIT	Th-519b-1-1		
DASH	KHUSHBU	Th-516ab-3-8		DENG	YAN	Tu-516ab-3-13		
DASTGERDI	JAIRAN NAFAR	Th-516ab-2-8		DENG	YIN HU	Mo-519a-1-4		
DASTJERDI	AHMAD KHAYER	We-520f-2-2		DENIS	SABINE	Th-519b-1-1		
DAVIDSON	BARRY D	Mo-524ab-2-2		DEPUYDT	DELPHINE	Mo-520ad-1-3		
DAVIES	JOANNE EMMA	Th-524c-4-2		DEQUINE	DUSTIN LOUIS	Mo-519b-3-5	Mo-520c-4-4	
DAVILA	YVES ANGEL	We-520c-2-2 Tu-520be-1-2		DEREIMS	ARNAUD	Mo-518ab-4-5		
DE ALMEIDA	OLIVIER	We-516ab-1-2		DERVAULT	FRANCK	Tu-525-1-3	Fr-514-2-2	Th-522-4-4
DE ANDRADE	MONICA JUNG	Mo-519a-4-1		DESCHERES	ISABELLE	We-514-3-4		
DE CALAN	GUILLAUME	Th-524c-3-2		DESHMUKH	V P	We-514-4-4		
DE CARVALHO	NELSON V	Tu-522-4-3 Tu-522-4-2	Fr-524c-1-1	DESHPANDE	VIKRAM S	We-525-4-2		
DE CARVALHO	NELSON V	Tu-522-4-3 Tu-522-4-2		DESHPANDE	VINIT	We-522-2-1		
DE GREEF	NIELS	Fr-520f-1-1		DESPRINGRE	NICOLAS	We-516ab-4-16		
DE LEÓN	JOSÉ ELISEO	Th-519a-4-1		DEVILLIERS	CLÉMENCE	Th-524ab-4-3		
DE LUCA	PATRICK	Mo-518ab-4-5		DEVRIES	LAWRENCE K.	Th-520f-3-6		
DE SILVA	RANGIKA THILAN	Mo-516ab-2-7		DI FRATTA	CLAUDIO	Mo-518ab-2-4		
DE SUTTER	SVEN	Fr-520c-2-4		DI LANDRO	LUCA	Th-524c-3-1	Th-525-3-3	We-519a-1-2
DE VILLORIA	ROBERTO GUZMAN	Th-520c-3-1		DI LILLO	LUIGI	Mo-518ab-2-4		
DE VOLDER	MICHAEL	Tu-515-1-1		DI STEFANO	DANILO	We-522-4-2	Mo-524c-4-3	
DEAR	JOHN PHILIP	Mo-514-2-2 Mo-514-4-4		DI TOMASO	JEREMY	Mo-520f-3-4		
DEBSKI	HUBERT	Tu-516ab-3-12		DIAKHATÉ	MALICK	Tu-522-1-2		
DEFERSHA	FANTAHUN M	Mo-516ab-4-8		DIAO	HELE	Th-522-3-4		
DEGENHARDT	RICHARD	We-520be-2-2		DIAZ	ANDRES FELIPE ARRIETA	We-520f-1-4		
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DING	WEIDAN	Tu-515-1-2	Mo-516ab-3-6				DUSSERRE	GILLES	Mo-520f-3-4	Mo-520c-3-1	
DJIDJELLI	HOCINE	Mo-520ad-4-5					DVORAK	MILAN	Mo-520f-1-2		
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DOEBRICH	OLIVER	Mo-524c-2-3					EARN	TAY T	We-520be-4-1	Tu-522-4-2	
DOLATA	ANNA JANINA	Fr-516ab-1-3	Fr-516ab-1-4				EBEL	CHRISTOPH	Th-518ab-2-3		
DOMANSKI	ROMAN	Tu-516ab-2-4					ECKERT	MARKUS	Mo-525-1-2		
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DONG	ANQI	Tu-524c-2-2					EKERMO	VIKTOR	Th-519a-4-2		
DONG	QI	Mo-515-4-3					EL MOURID	AMINE	Th-524ab-3-4		
DONG	XINGJIAN	We-520c-4-3					EL-GEUCHY	MOHAMED	Tu-516ab-1-7		
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HALM	DAMIEN	Tu-516ab-4-3	HARTL	ANNA MARIA	Tu-515-3-2 Th-520f-3-2 Tu-524ab-3-5
HAMADA	HIROYUKI	Fr-520f-1-3 We-516ab-1-6 We-516ab-1-7 Th-520f-2-1 Fr-520c-2-2	HARTL	DARREN JOHN	Tu-520c-3-5
		Th-520f-2-2 Th-520f-2-3 Th-520f-2-4 Th-520f-2-5 Th-520f-2-6	HARTMANN	MATHIAS PETER	Mo-522-3-3
		Th-520f-2-7 Th-520f-2-8 Th-520f-2-9 Th-520f-2-10 Th-520f-2-11	HARURSAMPATH	DINESHKUMAR	We-520c-1-1
		Th-520f-2-12 Th-520f-2-13	HASAN	SYED T	Th-520ad-4-3
HAMANO	KOTATSU	Mo-516ab-1-8	HASAN	ZEAID	Mo-515-3-5
HAMED	EHAB	Fr-520c-2-5	HASEGAWA	KENICHI	We-516ab-1-16
HAMILA	NAHIENE	We-518ab-1-3	HASEGAWA	TOMOHIRO	We-516ab-4-6
HAMMICHE	DALILA	Mo-520ad-4-5	HASHIMOTO	KINZO	Mo-516ab-1-13
HAMSTAD	MARVIN A	Th-520c-1-2	HASNAOUI	FOUAD SLAOUI	We-524ab-4-3
HAN	JANGWOO	Tu-516ab-3-9	HASSAN	EDRIS	Tu-520c-4-1
HAN	KYUNGSIK	Tu-520c-1-2	HASSINGER	IRENE	Th-515-4-5
HAN	SEJIN	Mo-522-1-2	HATTA	HIROSHI	Tu-516ab-1-2 Tu-516ab-1-4 We-516ab-3-2 We-516ab-3-6
HAN	SEUNG WOO	We-516ab-3-8	HATTEL	JESPER HENRI	We-518ab-3-4 We-522-1-3 Th-519b-3-5
HAN	SHENGCHAO	We-518ab-2-3	HAVAR	TAMAS LEVENTE	We-514-3-2
HAN	SONG HEE	Tu-524c-3-4	HAY	GAVIN SCOTT	Mo-519b-4-5
HAND	RUSSELL	We-520c-2-3	HAYAKAWA	KAZUKI	Mo-520f-3-5
HANSEN	CHRISTIAN	Tu-525-4-4	HAYASHI	KAZUMI	Fr-520ad-2-4
HANSEN	CHRISTOPHER	Tu-520be-2-2 Tu-520be-1-1	HAYASHI	RYOUSUKE	Th-522-3-2
HAO	LIANG	Tu-516ab-2-6 Mo-516ab-1-11	HAYASHI	SYUNICHI	Mo-516ab-1-9

HAYASHI	TAKAHIRO	Th-514-4-3	HIRA	HIROHITO	We-518ab-2-2	Fr-520ad-2-4	Mo-522-4-2		
HAYES	SIMON ANTONY	Th-520ad-1-1 We-520c-2-3	HIRABAYASHI	AKIKO	Th-518ab-4-1				
HAYMAN	BRIAN	We-520be-2-4	HIRAI	JUN	Fr-520f-1-3	We-524c-3-1			
HAYNES	ROBERT	Th-522-1-4	HIRAI	KENICHI	Tu-516ab-1-4				
HE	WEI	Tu-524ab-3-3	HIRANO	NORIYOSHI	Th-514-3-1				
HECKERT	NATHANAEL ALAN	Mo-522-4-3 Tu-516ab-2-8 Tu-515-3-4 Th-524c-4-4	HIRANO	NORIYUKI	We-524c-2-2				
HEEDER	NICHOLAS	Mo-515-1-3	HIRANO	YOSHIYASU	Tu-524ab-4-5				
HEIDARI	MARYAM	We-524ab-2-1	HIRASHIMA	TEI	Tu-520f-2-2				
HEIDARZADEH	AMIR	We-516ab-3-9	HIROSE	YASUO	Th-514-3-2	We-516ab-4-5			
HEIM	DANIEL	We-515-3-4	HIROSHIMA	NOBORU	Tu-516ab-1-2				
HEIM	JULIAN	Mo-518ab-3-3	HIRSEKORN	MARTIN	Tu-524c-2-4				
HEINRICK	MELISSA	Tu-516ab-1-1	HIVET	GILLES	Mo-524c-1-4				
HEINTZ	JEAN-MARC	Fr-519b-2-1 Th-520f-1-1	HOA	SUONG	Tu-525-1-3	Tu-516ab-1-7	Th-515-2-2	We-520be-1-2	Th-520ad-1-4
HEINTZ	J.M.	Fr-519b-2-1			Th-519a-1-1	We-520ad-4-1	Mo-515-1-4	We-519b-4-3	Mo-520c-4-2
HELENON	FABRICE	We-520ad-2-3 Th-524ab-2-3	HODGKINSON	JOHN	We-520be-3-	2			
HEMON	ELEN	Fr-516ab-1-8	HOEHL	CHRISTIAN	Tu-519b-1-3				
HENNING	FRANK	Mo-518ab-3-2	HOGG	PAUL JONATHAN	We-524ab-3-	ł			
HENTSCHEL	YVONNE	Th-520c-4-4	HØGH	JACOB	Fr-520ad-2-1				
HEPPLES	WARREN	Th-524ab-3-2	HOJJATI	MEHDI	We-520ad-2-	2 We-519b-4-3			
HERATH	MANUDHA THIYUNUWAN	Mo-516ab-1-3	НОЈО	MASAKI	Tu-519b-1-1	Th-520be-4-2	We-516ab-4-5		
HERCEG	TOMI	Fr-515-2-4	НОЈО	TOSHIHIKO	Mo-519b-1-1				
HERRANEN	HENRIK	Mo-520f-2-3	HOLMES	GALE A	Tu-516ab-2-8	Tu-515-3-4	Th-524c-4-4		
HERRMANN	AXEL SIEGFRIED	Tu-525-4-3	HOLSCHUH	RENE	Th-520be-3-4				
HEUZEY	MARIE-CLAUDE	Mo-516ab-4-4 We-516ab-1-19	HONDA	SHUN	Fr-514-2-3				
HIBBARD	GLENN D	Th-520be-3-2	HONG	NHAN VO	Tu-520ad-4-2	1			
HICKMANN	STEFAN	Tu-519b-4-3	HONG	SEOK BIN	Mo-520c-1-2				
HIGA	OLGA ZAZUKO	Th-516ab-3-1	HONG	TAEMIN	Th-516ab-2-1)			
HIGASHI	KENJI	Fr-519b-1-3	HONGSRIPHAN	NATTAKARN	Mo-516ab-2-3	J			
HILDEBRANDT	KLAUS	Th-520be-3-3	HOOS	KEVIN	Tu-522-3-6				
HIND	SIMON JAMES	Th-522-4-3	HOREJSI	KONSTANTIN	Mo-516ab-1-2				
HINE	PETER	Th-520be-2-2 Th-522-2-3 Th-520c-4-1	HORN	SIEGFRIED	We-520c-3-3				
HINTERHOELZL	ROLAND	Mo-524c-1-3 We-524c-1-1 Mo-522-3-3 We-520be-3-4 Tu-524c-4-2	HOROSCHENKOFF	ALEXANDER	Tu-520c-2-3	Tu-519a-4-1			
		Tu-518ab-1-3	HORST	PETER	Tu-519b-1-2	Th-516ab-4-1			
HINTON	MICHAEL JOHN	Tu-524ab-2-1 Mo-524ab-3-1 Mo-524ab-3-2	HOSAKI	KOSUKE	Tu-514-2-1				
HIOKI	TATSUYA	Tu-516ab-4-9	HOSOKAWA	NORIHIKO	Fr-514-2-1				

HOSSEINI	NASSIBEH	Mo-525-4-2	HWANG	HUI YUN	Th-520c-3-3 Th-520c-3-4 Fr-518ab-2-2 Th-522-4-2
HOSTETTER	MEGAN	Th-520be-3-2	HWANG	SANG KYUN	Th-520c-3-3 Th-520c-3-4
HOSUR	MAHESH	We-525-2-3 Tu-514-3-5 Mo-525-4-4	IAN	SILVERSIDES	Th-520c-1-3
HOU	TIANSONG	Th-514-1-2	IANNACE	SALVATORE	We-525-4-3
HOULLE	MATTHIEU	Th-519a-4-3	IARVE	ENDEL	Tu-522-3-6
HU	DONGMEI	Mo-515-2-2	IAVARONE	PAOLO	Th-524c-3-1
HU	XIAOZHI	Th-524ab-2-2	ICHIKAWA	ТОМОКО	Tu-518ab-3-6
HU	YILE	Tu-522-3-2	ICHIKI	МАКОТО	Tu-522-3-3
HU	W.	Mo-520be-3-5	IHA	KOSHUN	Mo-516ab-1-10
HUANG	FARONG	Th-520f-3-1	IKEDA	TADASHIGE	We-520f-1-2 Th-519a-2-2
HUANG	LEJIAN	We-522-3-2	IKKALA	OLLI	Mo-525-3-1 Mo-525-3-5
HUANG	LUJUN	Th-519b-3-4	ILLING	MARKO	Tu-520c-1-1
HUANG	QINGBO	We-515-2-3	IMAMURA	MASARU	We-524c-4-2
HUANG	XIANGLONG	Th-520ad-3-1	IMBALZANO	GABRIELE	Th-524c-3-1
HUANG	YANYI	Mo-525-1-1	INABA	KAZUAKI	Tu-524ab-1-4 Tu-520c-4-4
HUANG	ZHENG-MING	Mo-522-2-4	INMAN	DANIEL J.	Mo-519a-1-3
HUBER	TIM	Mo-520be-2-2	INO	HARUHIRO	Mo-520be-2-1
HUBERT	PASCAL	We-522-3-1 Th-520be-2-4 Th-520ad-1-3 Tu-515-1-4 Th-519a-2-4	INOUE	TAKAYOSHI	Mo-520f-3-5
		Tu-518ab-4-4 Tu-518ab-4-5 Tu-518ab-4-6 Tu-518ab-4-7 Tu-518ab-4-8	INOUE	YOKU	Fr-515-2-2 Th-516ab-3-10
		Tu-518ab-4-9 Tu-518ab-4-10	IRFAN	MOHAMMED SHAFIQ	Mo-520ad-2-1
HÜBLER	MORITZ	Mo-519a-2-4	IRISARRI	FRANÇOIS-XAVIER	Tu-525-2-2 Tu-525-3-5
HUCHETTE	CEDRIC	Mo-519b-4-1	ISHAK	ZAINAL ARIFIN MOHD	Mo-519b-1-1
HUEBNER	MATTHIAS	Mo-524c-2-3	ISHIAKU	UMARU SEMO	Mo-519b-1-1
HUFENBACH	WERNER A.	Fr-520ad-1-1 We-520f-1-1 Tu-519b-3-1 Th-520be-4-3	ISHIDA	OUSUKE	Mo-520be-1-3
HÜHNE	CHRISTIAN	Th-515-2-4	ISHIKAWA	KOTA	Fr-516ab-1-5
HÜMBERT	MARTINA	Th-520be-2-3	ISHIKAWA	MASASHI	We-516ab-3-2 We-516ab-3-6 Fr-514-2-3
HUMBS	MONIKA	Tu-524c-4-2	ITO	KANTA	Tu-520ad-3-1
HUMPHRIES	BILL	Mo-524c-3-5	ITO	TEIJI	We-524c-3-3
HUNEAULT	MICHEL A.	Mo-516ab-4-4	ITO	YOICHI	We-516ab-4-6
HURT	ROBERT	Mo-515-1-3	ITO	YUSAKU	Th-518ab-2-4
HUTAR	PAVEL	We-516ab-4-8	ІТОН	TORU	Th-514-3-1
HUTSAYLYUK	VOLODYMYR	Tu-516ab-1-3	IVANCEVIC	DARKO	We-516ab-4-14
HWAN	KIM HYUNG	Mo-516ab-2-6	IVANOV	DMITRY	We-520ad-2-3
HWAN	KIM SHIN	Mo-516ab-2-6	IVENS	JAN	Mo-520be-4-2 Mo-520be-4-3
HWAN	PARK YOUNG	Mo-516ab-2-6	IWAHORI	YUTAKA	Tu-524ab-4-5

IWATA	MINORU	Tu-519b-3-5		JIANG	LIN	Fr-519b-1-2		
IYER	BALAJI V. S.	Mo-519a-1-2		JIANG	XIA	Th-519b-2-1		
JACOB	XAVIER	We-520c-2-2		JIANG	YIJUN	Mo-515-4-3		
JACOBSSON	PER	Mo-520f-2-1		JIN	GUOYONG	We-519b-4-4		
JACQUEMIN	FRÉDERIC	Th-516ab-1-14		JIN	HUA	Th-516ab-4-6		
JACQUES	ERIC	Th-519a-3-3		JIN	XIAOSHI S	Mo-522-1-2		
JAKOBSEN	JOHNNY	Fr-520ad-1-2		JIN	ZHUYU	Th-522-3-3		
JAKUBINEK	MICHAEL	Th-519b-2-4		JIRATUMNUKUL	NANTANA	We-516ab-1-18		
JAMALI	JAMAL	Tu-524ab-1-2		JOANNÈS	SÉBASTIEN	Mo-524ab-2-3	Th-524ab-3-1	Th-524ab-4-3
JAMIL	AZHAR	Mo-524ab-1-3		JOCHUM	CHRISTIAN	Th-525-3-1		
JAMSHIDI	PAYAM	Tu-519b-1-3		JODOIN	BERTRAND	Th-518ab-1-4		
JANSEN	EELCO	Tu-525-1-2		JOHANSEN	KERSTIN	We-516ab-1-15		
JAR	BEN	We-520c-3-2		JOHANSON	KEVIN	Fr-514-1-2		
JAWORSKA	LUCYNA RENATA	Th-524c-3-4		JOHANSON	URMAS	Th-516ab-4-4		
JAYARAMAN	KRISHNAN	Fr-524ab-1-2		JOHANSSON	PATRIK	Mo-520f-2-1		
JAYARAMAN	RAGHAVAN	Tu-522-2-2 Mo-520ad-3-2 Th-514-4-5		JOHN	SABU	We-520be-4-3		
JEAN-ST-LAURENT	MATHILDE	Fr-525-2-3		JOHNSON	MICHAEL	Fr-514-1-2		
JEELANI	SHAIK	We-525-2-3 Tu-514-3-5 Th-516ab-3-	3 Mo-525-4-4	JOHNSTON	ALLISON LYNNE	Mo-524ab-2-2		
JEFFREY	HOLLY K	Tu-525-2-3		JONCAS	SIMON	Mo-516ab-1-7	We-520be-3-1	
JENSEN	BENJAMIN D.	Tu-520f-2-1		JONES	IVOR ARTHUR	Tu-524c-1-4		
JEONG	HO SOON	Tu-520c-1-2		JONES	RHYS	Tu-519b-4-1		
JEONG	J.	We-516ab-2-12		JOO	JAMES J	Mo-519a-2-2		
JERABEK	MICHAEL	Tu-515-3-2 Th-520f-3-2 Tu-524ab-3-	-5	JUILLARD	NICOLAS	Tu-524c-3-3		
JERNOT	JEAN-PAUL	Mo-520ad-1-4		JUNG	KWANGHO	Th-516ab-2-9		
JESSON	DAVID	Tu-520ad-2-1 Tu-520be-1-3		JUNG	SEUNG-BOO	Th-516ab-2-9		
JETAVAT	DHAVALSINH	We-520ad-3-2		JUNG	YOUNG BOK	Tu-520c-1-2		
JETTE	MARC-ANDRE	Mo-518ab-4-2		JUST	GORDON	We-519b-1-3		
JI	KANG MIN	Mo-516ab-2-6		KAASIK	FRIEDRICH	Th-516ab-4-4		
JI	KEJU	We-514-2-3		KACI	MUSTAPHA	Mo-520ad-3-1		
JI	ZI WU	Tu-516ab-2-6		KADDOUR	SAM	Tu-524ab-2-1	Mo-524ab-3-1	Mo-524ab-3-2
JIA	JINGJING	Th-516ab-2-1 Th-516ab-2-2 Th-516ab-2-	5	KADLA	JOHN F.	Tu-520ad-1-4		
JIA	YUXI	Th-525-1-2 Th-524c-4-3 Mo-522-3-6		KAESTNER	MARKUS	Th-520be-4-3		
JIAHUI	YANG	Mo-516ab-3-5		KAGEYAMA	KAZURO	We-518ab-2-1		
JIANG	DAZHI	We-515-4-1		KAINA	STEFFEN	Fr-520f-2-1		
JIANG	HAO	Th-524ab-4-5		KAJIKAWA	TAKUYA	We-520c-2-4		

KAKROODI	ADEL RAMEZANI	Mo-516ab-2-11	KAWANO	CRISTINA	Mo-516ab-4-4
KALAITZIDOU	KYRIAKI	Th-519a-2-1 We-520f-2-4 Th-516ab-3-2	KAWANO	NARIHIRO	Fr-516ab-1-5
KALAMKAROV	ALEXANDER L.	Tu-520c-4-3	KAWASHITA	LUIZ	Tu-522-4-4
KALINKA	GERHARD	Mo-520f-2-1 Th-519a-4-3	KAZEMAHVAZI	SOHRAB	Fr-520be-1-3 Mo-514-3-2
KAMINSKI	MYRIAM	Fr-516ab-1-8	KAZEMI	YASAMIN	Mo-516ab-2-11
KAMITA	TORU	Th-514-1-1 Th-514-3-4	KEE	YOUNGJUNG	Th-516ab-1-2
KAMIYA	TOMOHIRO	Fr-514-2-3 We-514-4-2	KELKAR	AJIT D.	We-524c-2-4
KANAZAWA	HITOSHI	Mo-519b-3-1	KELLY	DONALD WAINWRIGHT	Mo-524ab-3-4 Mo-524c-4-2 Th-514-1-2
KANDARE	EVERSON	Fr-514-1-4	KENNEDY	ANDREW	Fr-514-1-2
KANDLER	THOMAS	We-515-3-4	KENNON	WILLIAM RICHARD	We-520ad-3-2 We-516ab-4-15
KANDOLA	BALJINDER	Tu-514-4-1 Th-520be-4-4	KEPPLE	JENDI ITJIEH	We-520be-2-2
KANERVA	MIKKO SAMULI	We-520f-3-2	KERS	JAAN	Th-516ab-1-10 Mo-520f-2-3
KANESAKI	MANATO	Th-520be-4-2	KESSLER	DAVID	Th-519a-4-1 We-519a-2-4
KANG	CHUNG-GIL	We-516ab-1-12 We-516ab-2-7	KESSLER	MICHAEL RICHARD	Th-519a-4-1
KANG	HEEJIN	We-516ab-4-12	KEULEN	CASEY JAMES	Th-516ab-1-4
KANG	TAE-HYUNG	Mo-520c-1-2	KEYOONWONG	WIWAT	Th-516ab-2-4
KAO	CHIH-CHUAN	Mo-516ab-3-8	KHAKESTAR	REZA SOUFIAN	Mo-516ab-2-2
KAPADIA	AJAY	Th-520be-1-4	KHAN	FARZANA	Mo-516ab-1-8
KARA	EMRE	Th-525-1-3	KHANBAREH	HAMIDEH	Tu-519a-4-3
KARCHER	MICHAEL	Mo-518ab-3-2	KHANDELWAL	SOMESH	Mo-519a-3-6
KARDOMATEAS	GEORGE A	Tu-514-3-2	KHAY	MOHAMED	Mo-520ad-4-4
KAREVAN	MEHDI	Th-519a-2-1 We-520f-2-4	KHODDAM	SHAHIN	Tu-524ab-4-3
KARITSKAYA	SVETLANA	Tu-516ab-1-10	КНОО	BOO CHEONG	We-525-4-1
KARNA	NITESH KUMAR	We-516ab-4-12	KHORSAND	AMIR	Th-518ab-3-4
KASAKEWITSCH	ALLA	Fr-519b-1-4	KHOUN	LOLEÏ	Tu-516ab-4-13
KASANO	HIDEAKI	We-525-3-1	KIAT	JEAN-MICHEL	Th-524c-3-2
KASHFUDDOJA	MOHAMMAD	Tu-516ab-1-9	KIEBACK	BERND	Fr-520f-2-1
KASHTALYAN	MARIA	We-524ab-2-1	KIEFFER	JOHN	Mo-519a-1-1
KASHYAP	B P	We-514-4-4	KIESELSTEIN	EVA	Fr-520f-2-1
KATOH	HISAYA	Tu-516ab-4-9	KIKUCHI	TETSUO	We-516ab-1-6 We-516ab-1-7
KATZ	SARI	We-520f-3-1	KIM	К.	Tu-519a-3-3
KAWABE	KAZUMASA	Mo-516ab-4-9	KIM	SEON JEONG	Mo-519a-4-1
KAWAI	KAZUHIKO	Fr-520ad-2-4	KIM	BYUNGCHUL	Th-525-2-1
KAWAI	MASAMICHI	Tu-519b-3-2	KIM	BYUNGJO	Th-520f-4-4
KAWAMURA	NOBUYA	Mo-520c-4-3	KIM	CHEOL	Fr-524ab-1-3

KIM	CHUN GON	We-525-3-4	KIMURA	TERUO	Mo-520be-2-1
KIM	DA HYE	Fr-518ab-2-2	KINDLE	CHRISTOPHER	We-519a-2-4
KIM	HAKYONG	Fr-518ab-2-2	KING	ROGER	Th-514-4-2
KIM	HEE CHUL	Fr-524ab-1-3	KINGSTON	CHRISTOPHER	We-515-4-4
KIM	HYONNY	Mo-514-4-5	KINLOCH	IAN A.	Mo-515-2-3
KIM	HYUN HO	We-516ab-1-12 We-516ab-2-7	KINLOCH	TONY	Th-516ab-2-3
KIM	IN KYUNG	Mo-516ab-4-5	KIOSHI ARAKAKI	FRANCISCO	We-514-3-1
KIM	IN-GUL	Th-525-3-2	KIRIYAMA	KOHEI	Th-514-4-3 We-515-3-2
KIM	JAE HYUN	Tu-516ab-2-8 Tu-515-3-4 Th-524c-4-4	KIRVEL	CHRISTIAN	We-520f-1-1
KIM	JANG-KYO	Th-516ab-2-1 Th-516ab-2-2 Th-516ab-2-5	KISHI	HAJIME	Th-515-3-2
KIM	JUNG GOO	Fr-524ab-1-3	KISHIMOTO	KIKUO	Tu-524ab-1-4 Tu-520c-4-4
KIM	JUN-SIK	Tu-516ab-3-9	KITAMURA	HITOSHI	Th-518ab-4-2
KIM	KI YOUNG	Mo-516ab-1-1 Th-516ab-1-1	KITAMURA	MASAYUKI	Mo-516ab-3-3
KIM	KWANG-SEOK	Th-516ab-2-9	KITAMURA	TAKANORI	Tu-520ad-3-1
KIM	KYURIN	Mo-516ab-4-5	KITAOKA	SATOSHI	Fr-520ad-2-4
KIM	MINKEE	We-516ab-4-12	KJELL	MARIA HELLQVIST	Th-519a-3-1 Th-519a-3-3
KIM	MYUNGSOO	Tu-520c-1-2	KLEINEBERG	MARKUS	Th-520ad-2-1
KIM	SANG YUP	We-519a-1-1	KLEMPERER	CHRIS VON	Th-525-3-5
KIM	SEONG SU	Tu-524c-3-4 Th-520c-3-3 Th-520c-3-4 Fr-518ab-2-2 We-520be-4-4	KLIMCZYK	PIOTR	Th-524c-3-4
KIM	SEONG YUN	Th-519a-1-3	KLOTZ	CHRISTIAN	We-515-3-4
KIM	SEUNG JO	We-514-1-1	KLUNKER	FLORIAN	Mo-518ab-2-4
KIM	SEUNGHO	Th-516ab-1-2	KNOLL	JULIA	Tu-519b-3-1
KIM	SEUNG-WON	Tu-525-1-1 Tu-516ab-4-1	KNOWLES	ALEXANDER	Th-519b-2-1
KIM	SUGHWAN	Mo-516ab-1-5	КО	FRANK	Tu-520ad-1-4 Th-519b-2-4
KIM	SU-HYEON	Th-519b-3-3	КО	TAE-JUN	Mo-520c-1-2
KIM	SUMIN	Mo-516ab-1-5	KOBAYASHI	DAIGO	Tu-518ab-3-6
KIM	SUNG HOON	Mo-516ab-2-4	KOBAYASHI	SATOSHI	Mo-519b-1-3 Tu-519b-3-5
KIM	WOON KYUNG	Tu-519a-4-2	KOBAYASHI	YOSHIYUKI	Mo-519b-1-3
KIM	YUNHO	We-525-3-4	KOCAMAN	ESAT SELIM	Th-516ab-1-4
KIMBRO	EVAN	We-524c-2-4	KOCH	ILJA	Tu-519b-3-1
KIMIZU	MITSUGU	Mo-520be-1-3	KOCH	OLAF	Mo-516ab-1-2
КІМОТО	JYUNICHI	Th-514-3-1	KOGO	YASUO	Tu-516ab-1-2 Tu-516ab-1-4 We-516ab-3-2 Fr-514-2-3
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MCILHAGGER	AT.	Th-518ab-3-6 We-524c-4-4	MILLER	JASON E	Tu-519a-4-2
MCKINNEY	SCOTT	We-520c-3-2	MILLER	SANDI G	We-524c-2-3
MCLENDON	WESLEY ROSS	Tu-520f-3-3	MINAK	GIANGIACOMO	Mo-514-3-6 Mo-524ab-3-3
MEATHERALL	STEPHEN	Mo-516ab-3-11	MINAKUCHI	SHU	Th-518ab-2-4 Mo-522-3-2
MEGHLAT	EL MAHDI	Tu-516ab-3-2	MINES	BOB	Mo-522-2-3
MEHLHASE	SABRINA	Mo-525-3-4	MISRA	MANJUSRI	Mo-516ab-3-13 Th-514-4-1 Mo-520ad-4-2 Mo-520ad-4-4 Mo-516ab-4-1
MEIER	REINHOLD	Mo-518ab-3-3			Mo-516ab-4-6 Mo-516ab-4-7 Mo-516ab-4-8
MEIER	URS OTTO	Fr-514-1-1	MISTRY	MAYUR KISHORBHAI	Th-519a-3-5
MEINDLHUMER	MARTIN	Tu-522-2-1	MITCHELL	CYNTHIA	Mo-524c-3-3 Mo-524c-4-3
MELENKA	GARRETT W	Mo-520f-4-4	MITSCHANG	PETER	Fr-520be-1-4 Mo-518ab-2-2 Mo-518ab-3-4 Th-520be-2-3 Mo-518ab-3-5
MELO	JOSE DANIEL DINIZ	Mo-522-4-3			Th-520be-3-4 Th-520be-3-5 Th-520be-3-6
MEMON	ANIN	Tu-520ad-3-3	MITSUI	NOZOMI	We-518ab-2-1
MENDIS	PRIYAN	Th-515-2-1 Mo-524c-3-5	MITSUMUNE	DAIKI	Th-522-3-5
MENG	FANJUN	Th-520ad-3-1	MITWALSKY	MAXIMILIAN	Th-522-2-3
MENG	SONGHE	Th-516ab-4-6 Mo-520c-1-4	MIYAKE	TAKUSHI	Tu-516ab-2-5
MERAGHNI	FODIL	Tu-519b-4-5 We-516ab-4-13 We-516ab-4-16	MIYANO	YASUSHI	Tu-514-1-2 Tu-514-2-1 Tu-516ab-4-8 Tu-516ab-4-9
MERGO	PAWEL	Mo-522-4-1	MIYASAKA	FUMIKAZU	Tu-520f-3-6
MERRILL	MARRINER	We-519a-2-4	MOBASHER	BARZIN	M0-522-2-1
MERTINY	PIERRE	Th-516ab-3-4 Tu-525-4-4	MODI	DHIREN K.	We-520ad-3-3
MESOGITIS	TASSOS	Th-522-1-2	MOFIDI	AMIR	Mo-524ab-4-4

MOGHADAM	BABAK AHMADI	Mo-519b-4-3 We-520c-4-2	MUC	ALEKSANDER	We-516ab-4-9
MOGI	MASAHIRO	We-518ab-1-1	MUDRIC	TEO	Th-525-3-3
MOHAMED	GALAL F.A.	Th-524ab-2-3	MUJIKA	FAUSTINO	Tu-515-3-3
MOHAMMADI	MAZIAR SHAH	We-518ab-4-4	MÜLLER	TOBIAS	Tu-520c-2-3
MOHAN	RAM	We-524c-2-4	MÜLLER	VIKTOR	We-522-2-2
MOHANTY	AMAR K	Mo-516ab-3-13 Th-514-4-1 Mo-520ad-4-2 Mo-520ad-4-4 Mo-516ab-4-1	MULTHOFF	JÖRG BERNHARD	We-520be-3-3 Tu-516ab-4-5
		Mo-516ab-4-6 Mo-516ab-4-7 Mo-516ab-4-8	MURAKAMI	TETSUHIKO	Mo-516ab-4-9
MOLLENHAUER	DAVID H	Tu-522-3-6	MURAKAMI	YUKI	Mo-516ab-3-9
MONCHALIN	JEAN-PIERRE	Mo-519b-4-4	MURAYAMA	HIDEAKI	Fr-518ab-1-4 We-516ab-2-10 Fr-518ab-2-3 We-516ab-3-7
MONIN	MARTINE	Tu-519b-2-2	MURRAY	RICHARD	Fr-520f-1-2
MONTESANO	JOHN	We-519b-1-2	MUST	INDREK	Th-516ab-4-4
MONTI	MARCO	Mo-519b-2-1	MUSTAPHA	SAMIR	We-520c-4-3
MONTRIKITTIPHANT	THANIT	Mo-520ad-4-1	MUTHU	NELSON MADALAI	Tu-524ab-4-3
MORADI	AZALIA	Mo-519b-4-1	MUTHURAJ	RAJENDRAN	Mo-516ab-4-6
MORANDEAU	ANTOINE	We-520c-2-1	MUTSUDA	MITSUTERU	We-524c-3-3
MORII	TOHRU	We-518ab-1-1	MYALSKI	JERZY	Fr-516ab-1-1 Fr-516ab-1-2
MORIMUNE	SEIRA	Mo-520c-3-2	MYRIOUNIS	DIMITRIOS	Th-520ad-4-3
MORINAGA	RYO	We-524c-4-1 We-524c-4-2	NADOT	YVES	Mo-520f-1-1
MORITA	AKIYASU	Th-524ab-2-1	NADOT-MARTIN	CAROLE	Mo-520f-1-1 Fr-520f-2-5 Tu-516ab-4-3
MORONI	FABRIZIO	Mo-524ab-1-3 Mo-524ab-3-3	NAGARAJAN	VIDHYA	Th-514-4-1 Mo-520ad-4-4
MOROZOV	EVGENY V	We-519b-3-1 We-519b-4-1	NAGEL	ULF	Fr-520be-1-1 Mo-516ab-3-8
MORPHY	DAVE	Mo-515-1-1	NAGHASHPOUR	ALI	Th-519a-1-1 We-520ad-4-1
MORRIS	COREY	Mo-524c-4-1	NAGOH	SATOSHI	Th-518ab-4-2 Th-514-4-3 We-515-3-2
MORTAZAVI	FARHAD	Th-520c-4-3	NAGUIB	HANI E	Tu-520c-1-3
MORTELL	DANIEL J	We-516ab-4-11	NAGURA	YUICHI	Tu-516ab-1-2
MORTON	HANNAH	Th-524ab-3-3	NAHLIK	LUBOS	We-516ab-4-8
MOTAMEDI	DAMOON	Mo-524ab-4-2	NAIK	NIRANJAN K	Th-516ab-1-9
MOTOCHIKA	TOSHIHIRO	Th-518ab-2-1 Th-518ab-4-2	NAITO	KIMIYOSHI	Fr-520f-2-3 Th-516ab-3-10
MOUNKAILA	MAHAMADOU	Th-518ab-3-2	NAKADA	MASAYUKI	Tu-514-1-2 Tu-514-2-1 Tu-516ab-4-8 Tu-516ab-4-9
MOURET	LAURA	We-516ab-3-4	NAKAGOSHI	AKIRA	Fr-514-2-1
MOURITZ	ADRIAN	Tu-514-2-4 Fr-525-2-4	NAKAI	ASAMI	Tu-520ad-1-1 Mo-516ab-1-13
MOUROT	MICKAEL	Th-519b-1-1	NAKATANI	HAYATO	Fr-518ab-1-3 Mo-524ab-1-4 Mo-514-3-5 Th-524ab-3-5
MOUSSADDY	HADI	Mo-520c-3-6	NAKAYAMA	HIROKAZU	Th-516ab-3-10
MOYA	JOSE S	Th-515-3-4	NAKAYAMA	YOSHIFUMI	Tu-518ab-3-6
MU	JUNWU	Tu-524ab-3-3	NAKAYASU	YUKI	Mo-524c-2-2

NAKAZAWA	KAZUFUMI	Th-518ab-2-1	NIMDUM	PONGSAK	Tu-519b-2-2
NAM	KYUNGMIN	We-516ab-4-12	NISHI	MASATO	Tu-520f-2-2
NAM	TRAN HUU	Th-516ab-3-10	NISHIDA	HIROFUMI	Th-518ab-3-1
NANA	LILIANE GILBERTE NGAHANE	M0-522-1-4	NISHIDA	TATSUYA	Th-519a-2-2
NANAMI	NORIMICHI	Th-525-3-6	NISHIKAWA	MASAAKI	Th-524ab-4-2
NANDLALL	DENNIS	Th-516ab-1-6	NISHIYABU	KAZUAKI	Fr-518ab-1-1
		We-516ab-1-6 We-516ab-1-7	NIXON-PEARSON	OLIVER JAMES	Tu-519b-3-4
NASH	PETER	Th-524ab-1-4	NJUGUNA	JAMES	Th-516ab-2-7 Mo-525-4-5
NASUTION	MUHAMMAD RIDLO ERDATA	Mo-522-3-5	NOBES	DAVID S	Mo-520f-4-4
NATARAJAN	BHARATH	Tu-520c-2-4	NODA	JUNJI	Mo-520ad-4-3
NATARAJAN	SUNDARARAJAN	Mo-516ab-1-3	NODOMI	SHOTA	Tu-520f-3-6
NAVARRO	PABLO	We-525-1-4	NOISTERNIG	JOHANNES	Mo-516ab-1-2
NAWAZ	SABAHAT	We-524c-1-4	NOMURA	MANABU	Mo-520be-3-3
NEELY	TONY	Tu-520c-2-4	NOMURA	YASUTOMO	Fr-518ab-1-4
NEKOSHIMA	YUHEI	Th-522-3-5	NORRBY	MONICA	We-524ab-3-1
NESTLER	DAISY	Th-514-2-4	NOURANIAN	SASAN	Th-514-4-2
NG	TIAN SING	Fr-520c-2-5	NOVO	PAULO JORGE	Fr-520be-1-2
NGO	TD.	Mo-520be-3-5	NUBBO	NARMIN	Mo-525-3-4
NGO	TUAN	Th-515-2-1 Mo-524c-3-5	NUNES	JOAO PEDRO	Fr-520be-1-2 Th-514-2-3 Mo-516ab-3-2
NGÔ	ANH DUNG	Mo-520ad-4-4	NURICK	GERALD N	Th-525-3-5
NGUYEN	BENJAMIN V	Tu-520c-3-2	NUSSBAEUMER	FRANK	Mo-519b-3-3
NGUYEN	FELIX N	We-524c-2-2 Tu-518ab-3-6	NUZHNYY	DMITRY	Mo-520f-4-2
NGUYEN	QUYNH THUY	Th-515-2-1	NYMAN	TONNY	We-524ab-3-1
NGUYEN	SANG	Th-519a-3-5 Th-519a-4-3	OBO	TAKATO	Th-518ab-2-4
NGUYEN	THAN	Mo-524c-1-2	OBRADOVIC	JOVAN	We-525-4-4
NI	QING-QING	Tu-520c-4-2	O'BRIEN	DANIEL J	Th-519a-4-1
NICKEL	DANIELA	Th-514-2-4	O-CHAROEN	NARONGCHAI	Mo-516ab-4-3
NIER	MATTHIAS	Th-514-2-4	OCHI	SAYAKA	Th-514-3-1
NIEWEL	JOERG	Mo-516ab-3-7	OCHOA	OZDEN O	Th-525-3-6
NIK	MAHDI ARIAN	Th-520ad-2-4	OCKER	MARTIN	Tu-525-4-4
NIKBAKH	ALI	Mo-524ab-1-3	OCTEAU	MARC-ANDRE	We-520ad-2-2
NIKISHKOV	GENNADIY	Th-520c-3-2	ODEGARD	GREGORY	Tu-520f-2-1 Tu-520f-2-4
NIKISHKOV	YURI G	Th-520c-3-2 Th-520c-3-6	ODENWALD	STEPHAN	Tu-520c-1-1
NILSSON	MARTIN	M0-514-3-2	OGIHARA	SHINJI	Fr-518ab-1-3 Mo-524ab-1-4 Th-522-3-5 Th-524ab-3-5
NILSSON	SÖREN	We-524ab-3-1 Th-519a-4-3	OGIN	STEPHEN L	Th-520be-1-4 We-515-3-3

OH	JIYOUNG	Mo-519a-4-1					PAJARITO	BRYAN BUNING	Mo-519b-1-4	
OH	HYUN JU	Tu-524c-3-4	Th-520c-3-3	Fr-518ab-2-2			PALARDY	GENEVIEVE	Mo-518ab-4-2	
ОН	KYU HWAN	Mo-520c-1-2					PALAZZETTI	ROBERTO	Mo-524ab-3-3	
ОН	MEE-HYE	Tu-516ab-1-6					PAN	FUSHENG	Tu-516ab-2-6	
OHSAWA	ISAMU	We-516ab-1-16	Fr-518ab-1-4	Th-524ab-2-1	We-516ab-2-9	We-516ab-2-10	PAN	LEI	We-515-2-4	
		Fr-518ab-2-3	We-515-3-1	We-515-3-2	Mo-516ab-4-9		PAN	QING	Th-524c-4-1	
OHTA	SHUNNOSUKE	Tu-516ab-4-8					PAN	YUXIN	We-525-2-4	
OHTANI	AKIO	We-516ab-1-5	We-516ab-1-6	We-516ab-1-7	Th-518ab-2-1	We-519b-2-1	PANAMOOTTIL	SHYAM MOHAN	Fr-524ab-1-2	
		We-524c-3-1	We-524c-3-2	We-524c-3-3	We-524c-3-4	We-524c-3-5	PANCIROLI	RICCARDO	Mo-514-3-6	
OKEREKE	MICHAEL IHEMELANDU	We-522-3-3					PANDEY	GAURAV	Tu-519a-3-4	
OKUMURA	WATARU	Mo-520be-1-3					PANDITA	SURYA	Mo-520ad-2-1	
OLIVEIRA	LUIS ANDRE PINTO	Th-514-2-3					PANDURANGA	RAGHU	We-524c-2-3	
OLIVIER	PHILIPPE A	Mo-520f-3-4	Th-518ab-3-2				PANDYA	KEDAR SANJAY	Th-516ab-1-9	
OLSSON	ROBIN	We-525-3-2					PANKOW	MARK	Th-522-2-2	
OLSZEWSKA	ANNA	Mo-525-3-5					PANT	SHASHANK	We-520c-1-3	
OLSZOWKA-MYALSKA	ANITA	Fr-516ab-1-1	Fr-516ab-1-2				PARAMARTA	ADLINA	Mo-525-4-1	
ΟΟΤΟ	TERUO	Fr-514-2-1					PARÍS	FEDERICO	Th-524ab-3-6	We-520be-1-3
O'REILLY	KEYNA	We-516ab-2-11					PARK	BUM GUEN	Th-516ab-2-9	
ORIFICI	ADRIAN	Th-520ad-3-2					PARK	EUN-SOO	Mo-516ab-4-5	
ORLANDI	MARCO	Th-524c-3-1					PARK	HAEDONG	Th-522-1-3	
ORTWEIN	HANS PETER	Tu-519b-4-3					PARK	HYUNG WOOK	Tu-520c-1-2	
OSHIMA	KAHORI	Fr-515-2-2					PARK	JONGSHIN	Mo-516ab-2-4	
OSKOUYI	AMIRHOSSEIN BIABANGARD	Th-516ab-3-4					PARK	JOUNG-MAN	Th-520f-3-6	
OSORIO	LINA	Mo-520be-4-2	Mo-520be-4-3				PARK	KOOKJIN	We-516ab-4-12	
ÖSTERBERG	MONIKA	Mo-525-3-5					PARK	SEI JIN	Tu-515-1-1	Mo-515-1-2
OUDJENE	MARC	Tu-516ab-3-2					PARK	WOO LEE	Mo-516ab-1-1	
OURAHMOUNE	RÉDA EL HAK	We-516ab-2-5	Tu-524ab-3-1				PARK	YONG TAE	Tu-515-2-3	
OZ	FATIH ERTUGRUL	Tu-515-4-3					PARK	YOUNG BIN	Tu-520c-1-2	
OZAKI	YUKIO	Mo-516ab-3-10					PARK	YURIM	We-525-3-4	
OZEKI	HIKARU	Th-518ab-4-1					PARKES	PHILIP N	Mo-524ab-1-1	
OZOLIN	BORIS	We-520ad-4-2					PARMENTIER	ANTOINE	Mo-522-3-1	
PADOVEC	ZDENEK	Mo-520f-1-2					PARSONS	ANDREW JAMES	Mo-525-2-2	
PAGET	MARK	Mo-520ad-2-1					PARTRIDGE	IVANA KATHERINE	We-524c-2-1	
PAHLAVANPOUR	MARYAM	We-522-3-1					PARVEEN	BUSHRA	Th-520c-4-1	
PAIVA	MAYARA RAFAELA SOARES	Th-516ab-3-1					PASBAKHSH	POORIA	Mo-516ab-2-7	

PASCAL	LAVA	Tu-515-3-5	PICHER-MARTEL	GILLES-PHILIPPE	Th-520be-2-4
PASINI	DAMIANO	Th-520ad-2-4	PICKETT	ANTHONY	Tu-519b-2-3
PASSIEUX	JEAN-CHARLES	We-525-1-4	PIERCE	ROBERT SAMUEL	Mo-520c-3-4
PASTERNAK	IAROSLAV	Tu-516ab-1-3	PIERRON	FABRICE	Tu-515-3-5
PASTOR	MARIE-LAETITIA	Tu-516ab-3-4	PIETRZAK	KAMILA	Th-516ab-3-5
		We-516ab-4-9	PIIRLAID	MARKO	Mo-520f-2-3
PATROUIX	OLIVIER	We-520ad-3-4 We-516ab-3-1	PILLAI	KRISHNA M.	Mo-520ad-3-3
PAVLENKO	EKATERINA	Th-515-4-2	PILLAY	SELVUM BRIAN	Tu-518ab-3-2
		Mo-524c-3-1	PIMENTA	SORAIA	Tu-522-4-5
PEARCE	GARTH MORGAN KENDALL	Th-514-1-2 Mo-524ab-3-4 Mo-524c-4-2 We-520be-2-2	PINHO	SILVESTRE T	Fr-524c-1-2 Tu-522-4-3 Mo-520c-3-3 Tu-524ab-3-2 Tu-522-4-2
PEGORETTI	ALESSANDRO	Th-522-3-1			Mo-519b-3-6 Mo-519b-3-7
PEIJS	TON	Tu-520ad-3-4	PINTER	GERALD	Mo-524ab-2-1
PEIMING	ZHOU	Tu-516ab-2-2	PIPES	R. BYRON	Tu-522-3-5 Mo-524ab-4-3
PEITZ	ANASTASIA	Mo-520f-3-1	PIQUE	ALBERTO	We-519a-2-4
PELLEGRINO	SERGIO	Tu-525-2-1	PIRES	FRANCISCO MANUEL	Tu-516ab-3-7 Tu-518ab-4-5
PENG	FUJUN	Tu-516ab-1-5	PIRONDI	ALESSANDRO	Mo-524ab-1-3 Mo-524ab-3-3
PENG	HUA-XIN	We-515-4-1 Tu-519a-3-6	PLACET	VINCENT	Mo-520ad-1-2 Mo-520f-1-4
PENG	LINGLING	Tu-516ab-3-11	PLUMTREE	ALAN	Tu-519b-4-4
PENG	QINGYU	Th-520f-1-3	POHL	MARTIN	Th-520be-4-3
PENUMADU	DAYAKAR	Tu-514-1-1	POILLUCCI	RICHARD A	Tu-520be-1-1
PERAZA-HERNANDEZ	EDWIN ALEXANDER	Tu-520c-3-5	POITRIMOLT	MARIE	We-515-1-2
PERES	PATRICK	Tu-525-4-1	PÕLDSALU	INGA	Th-516ab-4-4
PÉREZ	MARIA DOLORES	Th-524ab-3-6	POLILOV	ALEXANDER	Mo-525-3-2
PERIE	GUILLAUME	Tu-516ab-4-4	POLOWICK	CHRIS LAROSE	Tu-518ab-1-4
PÉRIÉ	JEAN-NOEL	We-525-1-4	POLSEN	ERIK SHAUN	Fr-515-2-3
PERNICE	MARIA FRANCESCA	Tu-522-4-4	POODTS	EZEQUIEL	Mo-514-3-6
PERREUX	DOMINIQUE M	Tu-519b-3-3	POON	CHEUNG J	We-519b-1-2
PETROV	ALEXANDER STEFANOV	Mo-524c-4-3	PORCHER	FLORENCE	Th-524c-3-2
PETTERMANN	HEINZ E	Tu-522-2-1	PORFIRI	MAURIZIO	Tu-514-3-1
PETY	STEPHEN JOHN	We-519a-2-2	PORNWANNACHAI	WIWAT	Th-520be-4-4
PHAM	DINH CHI	Th-524ab-1-2	POTHNIS	JAYARAM R	Th-516ab-2-1
PHAM	TAN	Th-518ab-4-5	POTLURI	PRASAD	We-524c-1-4 We-516ab-1-10 Mo-524c-2-4 Tu-524c-3-2 We-524c-1-3
PHILLIPS	DAVID M	Mo-519a-3-1			We-520ad-3-2 We-520ad-3-3
PHILLIPS	STEVEN	Mo-520be-3-2	POTTER	KEVIN	Th-518ab-1-3 Th-520c-2-2 We-520ad-2-3 We-518ab-3-1 We-518ab-3-2
PIAT	ROMANA	We-522-2-4 We-522-2-1			Mo-524c-3-2

POTVIN	MARIE-JOSÉE	Fr-525-2-2	Fr-525-2-3				RAATZ	ANNIKA	We-520ad-1-1		
POURSARTIP	ANOUSH	Tu-524ab-1-3	Th-518ab-3-5	Mo-520f-2-4	Th-518ab-4-4		RABACHE	CAMILLE	Th-524c-3-2		
POURSORKHABI	VIDA	Mo-516ab-3-13	3				RABIEI	REZA	We-520f-2-2		
PRABHU	Ν	We-514-4-4					RADFORD	DONALD W	Th-524c-1-2		
PRADYAWONG	PRADCHAR	Tu-524ab-4-1					RAGHVAN	JAYARAMAN	Th-518ab-3-4	Th-514-4-5	Mo-520ad-3-2
PREAU	MATHIEU	Tu-518ab-4-4					RAHATEKAR	SAMEER	We-524c-3-4		
PRICE	ROGER	Mo-520ad-2-1					RAHMAN	MUHAMMAD M	We-525-2-3		
PROMSOOK	WATCHARINPORN	We-516ab-1-18	1				RAHMAN	TANVIR	Tu-525-1-2		
PRUSTY	B. GANGADHARA	Th-514-1-2	Mo-516ab-1-3	Mo-524ab-3-4	Mo-524c-4-2	We-520be-2-2	RAHMANI	BEHZAD	Th-522-4-1		
PRZYBYLA	CRAIG P	Th-524c-2-2					RAIHAN	MD RASSEL	Th-520c-3-5		
PUCHE	DANIEL	Tu-524c-3-3					RAJAN	S.D.	Mo-522-2-1		
PUECH	PASCAL	Th-515-4-2					RAJAPAKSE	YAPA D.S.	Mo-514-1-1		
PUNNING	ANDRES	Th-516ab-4-4					RAJU	GANGADHARAN	Tu-525-3-3		
PUPIN	CÉDRIC	We-516ab-1-13					RAKHSHANI	SASSAN	Fr-520c-1-4		
PUPURE	LIVA	We-524ab-1-2					RAMAKRISHNA	SEERAM	Mo-524ab-3-3		
PUPURS	ANDREJS	We-524ab-1-2	Th-519a-3-4				RAMIREZ	FERNANDO	Mo-520be-2-4		
PUTNAM	ERIC	We-520be-4-1					RÄMÖ	KOSTI	We-520f-3-2		
PUTTMANN	JOHN P	Mo-519a-2-2					RAMS	JOAQUIN	Fr-516ab-1-6	Th-519b-1-4	
PUYSTIENS	SILKE	Fr-520c-1-1					RAN	ZHIGUO	Fr-524c-1-4	Fr-522-1-4	
PUYVELDE	PETER VAN	Tu-520ad-4-2					RANGARI	VIJAYA K	Th-515-3-5		
QI	H. JERRY	Mo-519a-3-1					RAO	A GOURAV	We-514-4-4		
QI	JIAYI	We-516ab-2-8					RAO	ABHINAV	Tu-515-4-1		
QI	XINGHUAN	Th-516ab-4-8					RAO	SANJEEV	Mo-520be-1-1	Th-525-2-3	
QIAN	CONNIE CHENG	Fr-525-2-5					RAPP	HELMUT	Tu-520c-2-3		
QIAN	HUI	Th-519a-4-4					RASHEED	MOHAMMED IQBAL ABDUL	Th-520be-2-1		
QIAO	KUN	Mo-525-1-1					RASSINEUX	ALAIN	Th-520f-4-2		
QIDWAI	SIDDIQ	We-519a-2-4					RATCLIFFE	JAMES GORDON	Tu-522-4-3	Fr-524c-1-1	
QIN	FAXIANG	Tu-519a-3-6					RAVEY	CHRISTOPHE	Tu-518ab-3-3	Mo-518ab-1-3	
QIN	LIYUAN	Th-516ab-4-6	Mo-520c-1-4				RAY	BANKIM CHANDRA	Th-516ab-3-8		
QIU	GUOZHI	Tu-516ab-1-5					REDMAN	CHRIS	We-524c-1-2		
QIU	YIPING	Mo-516ab-1-8	Th-520f-2-2				REED	PHILIPPA	Th-524ab-3-3		
QU	PENG	Th-524c-4-3	Mo-522-3-6				REESE	STEFANIE	Tu-520f-2-3	We-519b-4-2	
QUAN	CHENGGEN	We-524ab-4-4					REICH	GREGORY W	Mo-519a-2-2		
QUARESIMIN	MARINO	Fr-519a-1-2	Tu-519b-1-1	Tu-519b-4-2			REIFSNIDER	KENNETH L	Th-520c-3-5		
QUITAIN	ARMANDO TIBIGIN	Tu-515-4-5					REINE	BÉNÉDICTE	Mo-520f-3-4		

REINOSO	JOSÉ	We-520be-1-3		ROHLING	HERMANN	Th-520c-2-3
REIS	SIGNO THADEU	Th-516ab-3-1		ROHMER	ERIC	Tu-524c-1-1
REITER	MARTIN	Tu-515-3-2 Th-520f-3-2	Tu-524ab-3-5	ROLFES	RAIMUND	Tu-525-1-2
REMY	OLIVIER	Fr-520c-2-4		ROLLIN	MAGALI	Mo-520C-3-1
REN	LINGLING	Mo-525-1-1		ROLLINS	DIANDRA	We-519a-2-3
REN	MUSU	We-515-2-3 We-515-1-4		ROMANOV	VALENTIN S.	Tu-520f-3-2
RENARD	JACQUES	Tu-519b-2-2		RONG	XUDONG	Th-519b-3-4
RENAUD	JOFFREY	Mo-518ab-3-1		ROPARS	LUDOVIC	Th-519b-4-2
RENAUD WILMES	ANDRE ANTOINE	Mo-520c-3-3		ROSCA	IOSIF DANIEL	Mo-515-1-4
REUM	PARK A	Mo-516ab-2-6		ROSEMAN	MORRIS	Th-516ab-1-11
REVEILLON	DAMIEN	Mo-520f-1-4		ROSS	ANNIE	Th-525-4-3 We-519b-3-3
RHEAD	ANDREW THOMAS	Th-525-2-1 Tu-525-3-1		ROSSI	MARCO	Tu-515-3-5
RIBEIRO	ANDRE LUIZ DE AGUIAR	Tu-525-4-2		ROUHI	MOHAMMAD SADEGH	Tu-518ab-3-5
RICE	KIRK	Tu-516ab-2-8 Tu-515-3-4		ROUSSEAU	CARL QUINN	Th-520ad-4-5
RICH	MICHAEL	Th-520f-3-5		ROUSSEAU	JEROME	Mo-519b-3-4
RICHARD	LUKE I	We-514-1-4		ROUX	MAXIME	Mo-520be-4-5
RIDER	ANDREW N	Th-520f-1-4		ROY	SAMIT	Tu-524ab-4-2
RIETMAN	BERT	Th-520be-2-1 Tu-524c-4-1		ROY	SREE SHANKHACHUR	We-524c-1-4 We-516ab-1-10
RIZVI	REZA	Tu-520c-1-3		ROZMUS	MARCIN HENRYK	Th-524C-3-4
ROBERT	GILLES	Tu-519b-4-5 We-516ab-4-	16	RTEIL	AHMAD	Fr-520c-1-4
ROBINSON	PAUL	Th-522-3-4 We-514-2-4	Tu-524ab-3-2 Mo-519a-3-2 Mo-519b-3-6	RUDEIROS-FERNÁNDEZ	JOSÉ LUIS	Mo-516ab-2-5
		Tu-522-4-5		RUIZ	EDU	Mo-518ab-4-3 Tu-518ab-3-3 Mo-518ab-1-3 Mo-519b-2-2 We-519b-3-3
ROBITAILLE	FRANCOIS	Th-518ab-1-4 Tu-524c-3-5	Th-522-4-3			Tu-518ab-2-1 Tu-518ab-2-2 Tu-518ab-2-3 Tu-518ab-2-4
ROBLES	RAQUEL OVALLE	We-524c-2-2		RUNGTA	ATRI	Tu-520c-2-4
ROCHE	JEAN-MICHEL	We-520c-1-4		RUOKOLAINEN	JANNE	Mo-525-3-5
RODAS	ANDREA CECILIA DORION	Th-516ab-3-1		RUTKOWSKI	PAWEL	Th-524c-3-4
RODRIGO	PILAR	Fr-516ab-1-6 Th-519b-1-4		RUTZ	BENJAMIN	Fr-520f-2-4
RODRIGUE	DENIS	Mo-520be-4-4 Mo-516ab-2-	11	RUZICKA	MILAN	Mo-520f-1-2
RODRIGUES BARROS	BRUNO HENRIQUE	Th-514-2-3		RYSZKOWSKA	JOANNA	Th-516ab-3-5 Th-516ab-3-9
RODRIGUEZ	EDUARDO SAEZ	Mo-520be-4-4		RYU	JUNGHYUN	Tu-525-1-1 Tu-516ab-4-1
RODRIGUEZ	SAMUEL	We-520c-2-2		SAARELA	OLLI	We-520f-3-2
RODRÍGUEZ	EXEQUIEL SANTOS	Fr-519a-1-4		SADEK	AHMAD	Th-520ad-3-5
ROEDEL	HARTMUT	Mo-524c-4-4		SAGARA	KATSUHIRO	Tu-516ab-2-6 Mo-516ab-1-11
ROGER	JEROME	Th-524c-3-3		SAIN	MOHINI	Mo-520be-3-2 No Code
ROH	JEONG U	Th-519a-1-2		SAINTIER	NICOLAS	Tu-519b-4-5

SAITO	HIROSHI	Mo-520be-1-3	Th-520be-4-2		SAYER	FLORIAN	We-520be-4-1		
SAITO	TAKESHI	We-524c-4-1			SBURLATI	ROBERTA	Tu-516ab-3-3		
SAJOUS	RAPHAEL	We-520be-4-2			SCAVONE	GARY	Th-514-4-4		
SAKAI	TETSUYA	We-516ab-3-3			SCHABEL	SAMUEL	Mo-525-3-4		
SAKATA	KAZUHIRO	Th-518ab-3-1			SCHACHER	FELIX H.	Mo-525-3-5		
SALA	GIUSEPPE	Tu-524ab-3-4	We-519a-1-2		SCHADLER	LINDA	Tu-520c-2-4		
SALAJEGHEH	POOYA	Th-514-3-4			SCHARES	RICHARD	We-520ad-4-2		
SALAVATIAN	MOHAMMEDMAHDI	Th-524ab-4-4			SCHARF	INGOLF	Th-514-2-4		
SALEEM	MUHAMMAD	We-524ab-1-1			SCHARRINGHAUSEN	JOACHIM	We-520c-3-3		
SALEHI	MASOUD	Mo-525-1-4			SCHEED	LAURENT	We-516ab-3-4		
SALEK	HASAN	Mo-518ab-4-2			SCHEERER	MICHAEL	Th-520c-1-1		
SALIB	MATTHIEU	Th-519b-1-1			SCHEMITSCH	EMIL H.	Mo-516ab-2-12		
SALLES	PHILIPPE	Th-515-4-2			SCHIJVE	WARDEN	Mo-522-1-1		
SALVIA	MICHELLE	We-520c-3-1	We-516ab-2-5 We-514-3-4	Tu-524ab-3-1	SCHILLO	CONNY	We-522-1-2		
SALVIATO	MARCO	Fr-519a-1-2			SCHLEDJEWSKI	RALF	Mo-518ab-2-3		
SAMADI	REZA	Tu-524c-3-5			SCHMITZ	ANDRE	Th-516ab-4-1		
SANDER	JAN	We-520f-4-1			SCHMUTZLER	HENRIK	Th-520c-2-3		
SANDOZ	PATRICK	Mo-520f-1-4			SCHNEIDER	CHRISTOF	Fr-520be-1-3		
SANTER	MATTHEW	Tu-525-2-1			SCHNEIDER	KONRAD	We-518ab-4-2		
SANTOS	MARTA SOFIA	Fr-520be-1-2			SCHNURR	RAPHAEL	We-520ad-1-1		
SAPOZHNIKOV	SERGEI BORISOVICH	Tu-516ab-1-11			SCHOSSIG	MARKUS	Tu-515-3-2		
SARASINI	FABRIZIO	Th-525-2-2			SCHUBERT	GERLIND	Tu-520c-3-4		
SARLIN	ESSI	We-520f-3-2			SCHUBERT	KONSTANTIN JONAS	Tu-525-4-3		
SASAKI	GEN	Fr-516ab-1-5	Th-519b-4-3		SCHUERMANN	JEREMIAS	Mo-520be-2-2		
SASAKI	MITSURU	Tu-515-4-5	Mo-516ab-3-1		SCHUETT	MARTIN	Mo-519b-3-3	Th-520c-2-3	
SASSI	SONIA	Th-518ab-3-2			SCHUHLER	CLEMENT	Fr-514-1-3		
SATO	NARUMICHI	Th-520c-2-3			SCHULTE	KARL	Mo-519b-3-3		
SATO	TOYOHIRO	Th-516ab-1-13			SCHULTE-HUBBERT	FELIX	Th-520be-3-3		
SATO	YU	We-515-3-2			SCHULTHEISS	DAVID	Th-518ab-2-3		
SATTERWHITE	JEFFREY	Th-522-2-4			SCHULZE	KAROLA	We-516ab-2-4		
SATTHUMNUWONG	PURIMPAT	Mo-519b-3-4			SCHUMANN	EVAN	Th-519b-4-5		
SAURAT	CLÉMENT	Tu-524c-1-1			SCHUSTER	JENS	Mo-520f-4-3		
SAUSE	MARKUS GÜNTER RONNY	We-520c-3-3			SCHWAB	MARTIN	Tu-522-2-1		
SAUVE	JEREMIE	Fr-514-2-2			SCHWARTZ	ANNIE GITOMER	Tu-520c-3-1		
SAWICKI	ADAM JOHN	Fr-518ab-2-5			SCOTT	ANNA E	Tu-519b-2-1	Th-524ab-3-2	Th-524ab-3-3

SEBAEY	TAMER ABDELLA	Th-525-4-4	SHEN	XIONGGANG	Mo-515-4-3		
SEBECK	KATHERINE	Mo-519a-1-1	SHENOI	AJIT	Th-524c-4-2	Tu-518ab-1-1	
SEDAGHATI	RAMIN	Tu-525-1-3	SHERWOOD	JAMES A.	Mo-524c-3-3	Mo-524c-4-1	Mo-524c-4-3
SEETHALER	RUDOLF	We-516ab-3-9	SHI	SHANSHAN	Th-524ab-2-2		
SEIFERT	THOMAS	We-522-4-1	SHI	ZHONGDE	Th-520ad-3-6		
SEKI	MASAKO	Tu-516ab-2-5	SHIBATA	KATSUJI	Tu-515-4-5	Mo-516ab-3-1	
SELEZNEVA	MARINA	Th-520be-3-6	SHIIYA	YUUKI	We-516ab-3-2		
SELLERGREN	PER-IVAR	Th-519a-4-2	SHIMABA	MASAAKI	Th-520be-4-2		
SENBA	ATSUHIKO	We-520f-1-2 Th-519a-2-2	SHIMAMURA	YOSHINOBU	Fr-515-2-2	We-516ab-4-6	Th-516ab-3-10
SEO	JIN WON	Fr-520f-1-1	SHIMIZU	RYUZO	We-514-4-2		
SEO	JUNGKI	Mo-516ab-1-5	SHIMIZU	TAKAYUKI	Th-518ab-4-3		
SEON	GUILLAUME	Th-520c-3-6	SHIMIZU	YUTA	Fr-520ad-2-4	Fr-520ad-2-4	
SEONG	DONG GI	Tu-520f-3-4	SHIMIZU	YUSUKE	Mo-516ab-1-13		
SERRA	ROGER	We-520c-2-1	SHIN	MIN KYOON	Mo-519a-4-1		
SERRUYS	YVES	Th-520f-3-3	SHIN	DONG KIL	Fr-524ab-1-3		
SEVE	MATHIAS	We-518ab-4-1	SHIN	HYUNSEONG	Th-520f-4-5		
SHA	JIANJUN	Tu-515-1-3	SHIN	KUM CHEOL	Fr-524ab-1-3		
SHADMEHRI	FARJAD	Tu-516ab-1-7 We-519b-4-3	SHIN	SANGJOON	We-516ab-4-12		
SHAFFER	MILO S P	Mo-520f-2-1 Th-519a-4-4 Fr-515-2-4	SHINDE	DATTAJI	We-524c-2-4		
SHAH	OWAISUR RAHMAN	We-520be-1-1	SHINOHARA	KOTARO	Fr-518ab-2-3		
SHALABY	ESSAM AHMED	Fr-516ab-1-9	SHIRSHOVA	NATASHA	Mo-520f-2-1	Th-519a-4-3	
SHALEV	OLGA	Tu-519a-1-2	SHISHKINA	OKSANA	We-522-4-4		
SHALOUF	SALAH M	Tu-519a-2-4	SHIVAKUMAR	KUNIGAL N	We-524c-2-3		
SHAMS	ADEL	Tu-514-3-1	SHOJI	HIROKAZU	Th-516ab-1-13		
SHAMSUDDIN	SITI ROSMINAH	We-520be-3-2 Tu-520ad-4-1	SHOTTON-GALE	NICHOLAS	Mo-520ad-2-1		
SHANG	YUANYUAN	Mo-519a-4-2	SHTEIN	MAX	Tu-519a-1-2		
SHANKAR	KRISHNAKUMAR	We-519b-3-1 We-519b-4-1	SHUKLA	ARUN	Mo-515-1-3	Mo-514-2-1	
SHAO	CHEN	Mo-519a-1-1	SHYNG	YAT-TARNG	We-524ab-4-2		
SHAO	YIXIN	Mo-524ab-4-4	SIEGFRIED	MARCEL	Tu-519b-3-6		
SHARMA	BHISHAM N	Mo-514-3-1	SIEGMUND	THOMAS	Mo-519a-3-6		
SHAROS	PHILIP ANTHONY	Fr-518ab-2-4	SIEWERS	BERND	Mo-516ab-3-7		
SHARPE	MATTHEW M	We-524c-2-3	SILBERSCHMIDT	VADIM V.	We-524ab-3-3		
SHEN	A. M.	Tu-519a-3-3	SILVA	CHRISTOPHER	Tu-524c-1-3		
SHEN	MINGJIE	Th-519b-1-3	SILVA	DIEGO FERNANDO	Th-516ab-1-7		
SHEN	XI	Th-516ab-2-1 Th-516ab-2-2 Th-516ab-2-5	SILVA	GUSTAVO VARGAS	Tu-515-3-3		

SILVA	JOAO FRANCISCO	Fr-520be-1-2 Th-514-2-3	Mo-516ab-3-2	SMITH	STEPHEN	Mo-519a-3-2
SILVA DE VASCONCELLOS	DAVI	Th-516ab-1-5		SMOJVER	IVICA	We-516ab-4-14
SILVA-CABALLERO	ALVARO	We-520ad-3-2		SMUK	BARBARA	Th-524c-3-5
SILVAIN	JEAN-FRANCOIS	Th-520f-1-1 Th-519b-4-5		SOBEY	ADAM J.	Th-524c-4-2
SILVAIN	J.F.	Fr-519b-2-1		SOBOTKA	VINCENT	Mo-518ab-1-2
SILVEIRA	ANTONIO CARLOS FRANCO	Th-516ab-3-1		SODANO	HENRY	Tu-519a-1-3
SIMACEK	PAVEL	Mo-518ab-4-1 Mo-520c-3-5		SODOKE	KOSSI FABRICE	Mo-516ab-2-2
SIMARD	BENOIT	Mo-515-1-1 We-515-4-4	Th-519b-2-4	SOFOCLEOUS	KATERINA	We-515-3-3
SIMON	JAAN WILLEM	Tu-520f-2-3 We-519b-4-2		SOLA	MATTHIEU	We-519b-3-3
SIMONEAU	CHARLES	Mo-519a-2-3		SOLIMAN	MARIA	Mo-516ab-2-5
SINCHUK	YURIY	We-522-2-4 We-522-2-1		SOLNICKOVA	LUCIE	We-518ab-4-4
SINCLAIR	GREGORY	Th-525-3-5		SOLTANNIA	BABAK	Mo-519b-4-3 We-520c-4-2
SINCLAIR	IAN	Tu-519b-2-1 We-520c-4-1	Th-524ab-3-2 Th-524ab-3-3 We-520c-4-4	SOMMER	GUIDO SEBASTIAN	We-520f-4-1
SINGH	CHANDRA VEER	We-524ab-1-3		SONG	CHAO	We-520ad-3-1
SINGH	JASPREET	Tu-520c-3-3		SONG	SEUNG A	We-520be-4-4
SINGH	RAMESH KUMAR	Tu-516ab-4-6		SONG	SHAONING	We-524ab-4-4
SINKE	JOS	Th-518ab-1-1		SONG	WEIGUANG	Th-514-2-1
SINOIMERI	ARTAN	Tu-516ab-4-4		SONI	GANESH	Tu-516ab-4-6
SIRIRUK	AKAWUT	Tu-514-1-1		SONNENFELD	CAMILLE	We-520c-2-2 Mo-522-4-1
SIRIVOLU	DUSHYANTH	Mo-514-4-1		SONODA	HIDETOSHI	Th-518ab-4-2
SIROIS	FREDERIC	Mo-515-4-1		SØRENSEN	BENT F	We-522-1-1 Tu-524ab-3-6 Mo-524ab-4-1
SIROMANI	DEEPAK	We-520be-2-1		SORRENTINO	LUCA	Tu-516ab-4-10
SJOLANDER	JENS	Mo-524c-1-1		SORRENTINO	LUIGI	We-525-4-3
SKORDOS	ALEX	Mo-518ab-4-4 Th-522-1-2	We-524c-2-1	SOTTOS	NANCY R	We-519a-2-1 We-519a-1-1 We-519a-2-2 We-519a-1-4
SKRIFVARS	MIKAEL	Mo-525-1-4		SOUFIANI	ARMAN MAHBOUBI	Mo-525-1-4
SLUYS	LAMBERTUS JOHANNES	Tu-522-1-1		SOULAT	DAMIEN	Tu-520f-3-1
SMART	GILL	Th-520be-4-4		SOUSA	CARLOS SANTOS	Tu-516ab-3-7
SMET	MARIO	Tu-524ab-1-1		SOUTIS	CONSTANTINOS	We-516ab-1-10 We-524ab-3-4
SMIRNOVA	ZINAIDA	Th-516ab-4-5		SPANGENBERG	JON	Th-519b-3-5
SMITH	ANDREW J	Tu-519b-1-3		SPEARING	SIMON M	Tu-519b-2-1 We-520c-4-1 Th-524ab-3-2 Th-524ab-3-3 We-520c-4-4
SMITH	ANDREW T.	We-519a-2-4		SPINKS	GEOFFREY	Mo-519a-4-1
SMITH	LLOYD	Th-524ab-4-4		SQUIRES	STEVE	Tu-519b-1-3
SMITH	MATTHEW	Mo-522-2-3		ST. JOHN	NIGEL	Mo-516ab-1-3
SMITH	NICHOLAS ALAN	Tu-522-3-5		STAIGER	MARK P.	Mo-520be-2-2
SMITH	PAUL A	Th-520be-1-4 Tu-520be-1-3	Mo-524ab-3-1	STANCU	IZABELA CRISTINA	Mo-516ab-3-12

STANESCU	PAUL OCTAVIAN	Mo-525-1-3 Mo-516ab-3-12	SULYM	HEORHIY	Tu-516ab-1-3		
STANG	HENRIK	Fr-520ad-2-1	SUMNER	JONATHON	We-520be-3-1		
STASIUK	GALYNA	We-522-2-1	SUN	С.Т.	Mo-514-3-1		
STASZEWSKI	WIESLAW JERZY	Tu-525-4-1	SUN	JING	Th-520ad-1-2		
STEFANIAK	DANIEL	Th-520ad-2-1	SUN	JINLIANG	We-515-2-3	We-515-1-4	
STEINER	STEPHEN ALAN	Fr-515-2-1	SUN	MING JIAN	Th-519a-1-4		
STEINKE	JOACHIM HG	Mo-520f-2-1 Th-519a-4-3	SUN	SHIYONG	Th-524ab-2-2		
STELZER	STEFFEN	Mo-524ab-2-1 Tu-519b-4-1	SUN	XIAOCHEN	Th-524c-4-3		
STEPHANI	GÜNTER	Fr-520f-2-1	SUN	XIASHENG	Tu-524ab-4-4		
STIER	BERTRAM	Tu-520f-2-3 We-519b-4-2	SUN	XIUSHAN	Tu-522-1-4		
STIGH	ULF	Fr-524c-1-3	SUN	ZHI	Th-524ab-2-2		
STIMPFL	JOFFREY	We-518ab-3-3	SUNDARARAJ	UTTANDARAMAN	Th-516ab-3-4		
STOCCHI	CESARE	Mo-519b-3-6	SUPLICZ	ANDRAS	Mo-520f-3-6		
STOMMEL	MARKUS	Tu-520ad-1-3	SUROWSKA	BARBARA	We-516ab-4-7		
STRAWDER	GREGORY	Tu-514-3-5	SUTCLIFFE	MICHAEL	We-522-2-3		
STREBINGER	MATTHIAS	Mo-522-3-3	SUZUKI	KAZUYA	We-516ab-1-16	We-516ab-2-9	
STRIBECK	NORBERT	We-518ab-4-2	SUZUKI	TOMOYUKI	Mo-522-4-2		
STRUZZIERO	GIACOMO	Mo-518ab-4-4	SUZUKI	YUJI	Mo-520f-3-5		
STUDER	JULIA	Th-518ab-3-3	SUZUOKA	AKIHIRO	Mo-520be-2-1		
SU	HONGHUA	We-518ab-2-3	SVENSSON	DANIEL	Fr-524c-1-3		
SU	HUILAN	Tu-520be-2-3	SWENTEK	IAN N	Fr-520ad-2-3		
SU	YISHI	Fr-519b-1-2	SWINDEMAN	MICHAEL	Tu-522-3-6		
SU	YUQIN	Mo-515-4-4	SWOLFS	YENTL	Th-520be-2-2	Th-522-2-3	Mo-524ab-3-5
SU	ZHOUCHENG	We-524ab-4-4	SZPIEG	MAGDALENA	Mo-520f-1-3		
SUBBARAMAIAH	RAVISHANKAR	Mo-524c-4-2	SZUTKOWSKA	MAGDALENA	Th-524c-3-5		
SUEMASU	HIROSHI	Tu-522-3-3	TABATA	AKIHISA	Mo-520f-3-3		
SUGIO	KENJIRO	Fr-516ab-1-5	TABI	TAMAS	Mo-520be-3-1		
SUH	DONGSEOK	Mo-519a-4-1	TADASHI	UOZUMI	Mo-516ab-1-13		
SUI	DONG XIAO	We-520f-4-2	TAGUET	AURÉLIE	Th-522-1-1		
SUKENIK	CHAIM	We-520f-3-1	TAHER	SIAVAH T	Tu-514-2-2		
SULEJMANI	SANNE	Mo-522-4-1	TAHERI	FARID	Mo-519b-4-3	We-520c-4-2	
SULEMAN	AFZAL	Th-516ab-1-4 Tu-516ab-3-7	TAKAGI	HITOSHI	Tu-520c-2-1		
SULIMA	IWONA	Th-519b-4-4	TAKAGI	MITSUROU	Th-518ab-2-1		
SULLIVAN	ERIN	Th-516ab-3-2	TAKAHASHI	JUN	We-516ab-2-9		
SULTANA	IREEN	Th-520ad-3-6	TAKAHASHI	KOSUKE	Tu-524ab-1-4	Tu-520c-4-4	

TAKAI	YUKA	We-516ab-1-6 We-516ab-1-7	TENG	YI-AN	Mo-520be-3-4
TAKAO	YOSHIHIRO	Th-522-3-2	TERAMURA	SUGURU	Tu-520ad-3-1
TAKAYAMA	KOSUKE	Th-514-4-3	TERASHIMA	KEITA	Th-514-1-1 Th-514-3-4
TAKEDA	KOHEI	Mo-516ab-1-9	TERRIAULT	PATRICK	Mo-519a-2-3
TAKEDA	NOBUO	Th-518ab-2-4	TERUMASA	TSUDA	Th-515-4-1
TAKENAKA	EIJI	We-524c-3-3	TESINOVA	PAVLA	Tu-516ab-2-3
TALEB	LAKHDAR	Tu-519b-1-4	THERRIAULT	DANIEL	Tu-515-2-4 Mo-520c-3-6 Mo-515-4-1
TALLA	AIMÉ SYLVAIN FOTSO	Mo-525-4-3	THIBAUDEAU	DAVID	Th-522-4-5
TAMIN	MOHD N	Mo-519b-3-2	THIENPONT	HUGO	Mo-522-4-1
TAN	TEIN-MIN	Th-514-1-3 We-520be-2-1	THIONNET	ALAIN	Fr-524ab-1-1 Mo-524ab-2-3 Th-524ab-4-3
TAN	TING	Th-524ab-4-5	THIRUMALAI	DURAI PRABHAKARAN RAGHAVALU	Fr-522-1-3
TAN	VINCENT BC	Tu-522-1-4 We-524ab-4-4 We-525-4-1	THITSARTARN	WARINTORN	Tu-515-2-1
TAN	XUELIN	Tu-520ad-2-2	THIVIERGE	SÉBASTIEN	Mo-524ab-4-4
TANABE	DAIKI	Th-522-3-5	THOMAS	JAMES P.	We-519a-2-4
TANAKA	HIROHA	Mo-516ab-2-9	THOMASON	JAMES	Mo-520be-4-4 Mo-516ab-2-5 Mo-516ab-3-8 We-520f-4-3
TANAKA	MOTOTSUGU	Th-520be-4-2	THOMASON	J.	Mo-520be-4-4 Mo-516ab-2-5 Mo-516ab-3-8 We-520f-4-3
TANAKA	YOSHIHISA	Th-520ad-4-2	THOMOPOULOS	STAVROS	Tu-520c-3-1
TANDON	GYANESHWAR P.	Mo-520c-1-3	THOMPSON	MARK	Mo-520c-3-4
TANG	MIN	Mo-520ad-4-1	THOMSEN	OLE T.	Fr-520ad-1-2 Th-524ab-1-3
TANG	SHUNYU	Mo-516ab-3-3	THOMSEN	OLE THYBO	Tu-514-2-2 Tu-514-2-3 Tu-515-3-5
TANNER	DAVID A	We-516ab-4-11	THOMSON	RODNEY	Th-514-1-2 Mo-524c-4-2 We-520be-2-2
TARLETON	EDMUND	We-524ab-2-3	THOMSON	VINCENT	Th-520ad-3-6
TAUCHNER	JÜRGEN	Mo-524ab-2-1	THONGPIN	CHANCHAI	Mo-520be-2-3
TAWFICK	SAMEH H.	Tu-515-4-1 Tu-515-1-1 Mo-515-1-2	THORPE	RYAN J	Th-518ab-3-5
TAWFIK	SAMER	We-520f-1-3	THOSTENSON	ERIK T	Th-520f-1-4 Tu-519a-3-4
TAXI	BA	We-516ab-3-5	TIAN	WENDY WENJUN	Fr-525-1-1
TAY	TONG EARN	Tu-522-1-4 Tu-522-4-3 Tu-522-4-2	TIMOSHCHUK	NIKOLAY	We-524c-1-2
TAYA	MINORU	Tu-519a-1-1	TIRILLÒ	JACOPO	Th-525-2-2
TAYLOR	CHRISTOPHER	Mo-525-4-1	TISHKOVA	VICTORIA	Th-515-4-2
TCHERBI-NARTEH	ALFRED	Tu-514-3-6 Mo-525-4-4	TOBUSHI	HISAAKI	Mo-516ab-1-9
TEIMOURI	BEHNAM	We-516ab-3-9	TOGASHI	KOHSUKE	Th-520f-2-1
TEIMOURI	HESSAMODIN	We-516ab-3-9	TOHGO	KEIICHIRO	Fr-515-2-2 We-516ab-4-6
TEIXEIRA	RITA	Fr-524c-1-2	TOLA	CARMEN	Tu-519b-3-6
TEJADA	SERGIO	Mo-519b-3-6	TOMIOKA	ТОМОКО	We-516ab-2-10
TENG	TIM	Th-524ab-1-1	TOMITE	MASAHIRO	Tu-519b-3-5

TON-THAT	МТ.	Mo-520be-3-5	TUN	SWEZIN THAN	We-524c-2-2
TORRECILLAS	RAMON	Th-515-3-4	TURCHYN	IGOR	Tu-516ab-1-3
TORRES	BELÉN	Fr-516ab-1-6 Th-519b-1-4	TURKMEN	HALIT SULEYMAN	Th-516ab-1-4
TORRES	MAURICIO	We-520c-2-2	TURNER	THOMAS	Fr-525-2-5
TORRES MARQUES	ANTÓNIO	Fr-520be-1-2 Tu-518ab-4-5	TUSS	JAMES M	Tu-519a-4-2
TOUBAL	LOTFI	We-524ab-1-1 Mo-516ab-2-2 Mo-519b-2-3	TUTUM	CEM C	We-518ab-3-4 We-522-1-3
TOULITSIS	ANASTASIOS	Th-516ab-1-11	TYE	JORDAN	Tu-520be-2-2
TOUMI	RIM BEN	Tu-519b-2-2	TYSMANS	TINE	Fr-520c-1-1 Fr-520c-1-2 Fr-520c-2-4
TRABELSI	WASSIM	Fr-524ab-1-1	UAWONGSUWAN	PUTINUN	Mo-516ab-4-3
TRAN	LE QUAN NGOC	Mo-520ad-2-2 Tu-520ad-4-3	UCHIDA	TOSHIKAZU	We-516ab-1-5
TRAN	NUM HUU	Tu-519b-3-5	UCHIJO	CHIKA	Th-520be-4-2
TRAN	PHUONG	Mo-524c-3-5	UCSNIK	STEPHAN	Mo-524ab-2-1
TRAN	THAO	Mo-520be-1-4	UDDIN	MD. SAYEM	We-519b-4-1
TRAPPE	VOLKER	Tu-519b-4-3 Th-520c-4-4	UHART	MAYLIS	We-520ad-3-4
TRASK	RICHARD S	We-519a-1-3	ULBRICHT	VOLKER	Th-520be-4-3
TRESSOU	BENJAMIN	Fr-520f-2-5	ULVEN	CHAD A	Mo-525-4-1 Mo-525-4-2
TRICKER	DAVID	Th-519b-4-2	UMER	REHAN	Tu-514-3-4
TRIDECH	CHARNWIT	We-514-2-4	UNGER	THOMAS	Mo-524ab-2-1
TRIGGS	ELDON	Mo-525-4-4	UNO	TAKAYUKI	We-524c-3-3
TRIPATHI	ANUBHAV	Mo-515-1-3	URATA	NAOYA	We-516ab-4-6
TRIVAUDEY	FREDERIQUE	Mo-520ad-1-2	URVOY	STÉPHANE	Th-520f-3-3
TROCHU	FRANÇOIS	Tu-518ab-1-2 Mo-518ab-4-3 Mo-518ab-3-1 Tu-518ab-3-3 Mo-518ab-1-3	UTSUNOMIYA	SHIN	We-516ab-3-6 Fr-514-2-3 We-514-4-2
		Tu-524c-4-4	UZAWA	KIYOSHI	Mo-520be-1-3 We-518ab-2-1 Fr-518ab-1-4 We-516ab-2-9 We-516ab-2-10
TROESTER	THOMAS	We-518ab-4-3 Mo-516ab-3-7			Fr-518ab-2-3
TROMBINI	MARION	Tu-516ab-4-3	UZAWA	TOSHIYUKI	Th-514-3-4
TRUDEAU	PAUL A	Mo-518ab-4-2	VADEAN	AURELIAN	Mo-519b-1-2
TRUJILLO	EDUARDO	Mo-520be-4-2 Mo-520be-4-3	VADORI	RYAN	Mo-516ab-4-1
TSAI	STEPHEN W	Mo-520c-4-1	VAIDYA	UDAY K	Tu-518ab-3-2
TSAMPAS	SPYROS ANASTASIOS	Mo-519b-2-1	VAJARI	DANIAL ASHOURI	Mo-524ab-4-1
TSUKROV	IGOR	Tu-524c-3-6 We-522-4-3	VALASHANI	SEYED MOHAMMAD MIRKHALAF	Mo-525-3-6
TSUMURA	YUSUKE	Th-524ab-4-2	VALENTE	MARCO	Th-525-2-2
TSUTAYA	SHINJI	Fr-518ab-1-1	VALENTE	TEODORO	Th-525-2-2
TUAL	NICOLAS	Tu-522-1-2	VALLE	MASSIMILIANO	Th-524C-3-1
TUDOR	А.	Tu-519a-3-3	VALLEE	ALEXANDER J	We-520ad-2-2
TUMOLVA	TERENCE PALAD	Mo-516ab-2-1 Mo-516ab-2-9	VAN DER ZWAAG	SYBRAND	Tu-519a-4-3

CODE = DAY-ROOM-SESSION-ORDER	Z
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VAN RAVENHORST	JOHAN HENDRIK	Tu-524c-4-1	VILFAYEAU	JÉRÔME	Tu-520f-3-1
VAN VUURE	AART WILLEM	Mo-520ad-1-3 Mo-520ad-2-2 Tu-520ad-4-2 Mo-520be-4-2 Mo-520be-4-3	VILLANI	GIUSEPPE	We-525-1-2
		Tu-520ad-4-3	VILLEGAS	IRENE FERNANDEZ	Th-520be-1-3 We-518ab-2-4
VAN WINGERDE	ARNO	We-520be-4-1	VILLEMURE	ISABELLE	Th-522-4-1 Th-520c-4-3
VANCLOOSTER	KRISTOF	Tu-524c-1-2	VILLIERE	MAXIME	Mo-518ab-1-2
VAND	AHMAD ZOHRE	Th-515-4-4	VIPPOLA	MINNAMARI	We-524ab-3-2
VANDELLOS	THOMAS	Mo-519b-4-1	VISSER	HENDRIKUS A.	Th-520be-2-1
VANDENBERGHE	THIERRY	Th-520f-3-3	VOIT	WALTER	Mo-519a-4-1
VANTOMME	JOHNNY	Fr-520c-1-2	VUORINEN	JYRKI	We-524ab-3-2
VARELA	TAMARA BLANCO	We-525-3-3	WAAS	ANTHONY M	Th-522-2-2
VARGA	CSILLA	Th-516ab-3-6	WACHINGER	GEORG CHRISTIAN	Th-520ad-3-3
VARLEY	RUSSELL JOHN	Fr-525-1-1	WADA	DAICHI	We-516ab-3-7
VARNA	JANIS	Tu-520ad-1-3 We-524ab-1-2 Th-519a-3-4	WADA	MASASHI	Fr-520ad-2-4
VASCONCELOS	JOSE MIGUEL	Th-514-2-3	WAGNER	DANIEL	We-520f-3-1
VASCONCELOS	RÉBLA GONÇALVES	Tu-520ad-3-2	WAGNER-KOCHER	CHRISTIANE	Tu-516ab-4-4
VASILE	EUGENIU	Mo-525-1-3 Mo-516ab-3-12	WAHL	JEAN-CHRISTOPHE	We-516ab-2-3
VAUTROT	LILIAN	Th-519b-1-1	WAIT	CLAIRE FIONA	Mo-520ad-2-1
VAZIRI	REZA	Tu-524ab-1-3 Tu-516ab-3-8 Th-518ab-4-4 Fr-520f-2-5 Mo-520f-2-4	WAKIZAKA	KAZUKI	Mo-520f-3-3
VEGA	DAVID	Th-524ab-3-6	WALBRAN	ANDREW	We-516ab-1-4
VEILLERE	AMELIE	Fr-519b-2-1	WALDBJOERN	JACOB PAAMAND	Fr-520ad-2-1
VEILLERE	А.	Fr-519b-2-1	WALLSTRÖM	LENNART	Tu-520ad-1-3
VELTHUIS	RUDI	Mo-520f-3-1	WALTER	ROLF	Th-515-4-5
VENKATESH	T.A.	Tu-520c-1-4 Tu-520c-3-3	WALTHER	ANDREAS	Mo-525-3-1 Mo-525-3-3 Mo-525-3-5
VERBRUGGEN	SVETLANA	Fr-520c-1-1	WAN	YI	We-515-3-1
VERCHERY	GEORGES	We-520be-1-4	WANG	ZHI-YONG	Tu-525-1-4
VERMEERSCH	OLIVIER G.	Tu-524c-3-3	WANG	BEN	Th-516ab-3-2
VERNET	NICOLAS	Tu-518ab-1-2 Tu-524c-4-4	WANG	CHUAN	Fr-520c-2-3
VERNET	NICOLAS	Tu-518ab-2-1 Tu-518ab-2-2 Tu-518ab-2-3 Tu-518ab-2-4	WANG	CHUANXI	Mo-514-3-3
VERNIER	CLÉMENCE	Mo-519b-3-3	WANG	CHUN H	We-514-3-3 Th-520ad-3-2
VERPOEST	IGNAAS	Tu-524ab-1-1 Tu-524c-1-2 Mo-520ad-1-3 Mo-520ad-2-2 Th-520be-2-2	WANG	DONGRUI	Tu-519a-4-4
		Th-522-2-3 Th-522-2-4 Th-522-2-5 Th-522-2-6 Th-522-2-7	WANG	HAI	Mo-520ad-1-1 Tu-522-3-2 Th-522-3-3 We-516ab-3-5 Tu-516ab-3-13
		Th-522-2-8 Th-522-2-9 Th-522-2-10 Th-522-2-11			We-516ab-4-4
VERTOMMEN	JAN	Mo-520be-4-2	WANG	HAO	Mo-520ad-1-1
VIDAL-SALLÉ	EMMANUELLE	Mo-524c-1-2 Tu-518ab-3-4	WANG	JILONG	Th-520f-2-2
VIEILLE	BENOIT	Tu-519b-1-4	WANG	JIN	Mo-522-1-2

WANG	JOHN J	Tu-515-4-4	WEBSTER	DEAN	Mo-525-4-1 Mo-525-4-2
WANG	JY-AN JOHN	Th-524ab-4-5	WECK	DANIEL	Fr-520f-2-1
WANG	KUN	Mo-515-2-2	WEHRKAMP-RICHTER	TOBIAS	Tu-524c-4-2
WANG	LIWEI	Mo-520ad-2-1	WEI	HAOWEN	Mo-516ab-4-9
WANG	MENGYUAN	We-516ab-1-9	WEI	HUIGE	Tu-519a-3-5
WANG	MIAO	Mo-525-3-5	WEI	SUYING	Tu-519a-3-5
WANG	PENG	Tu-515-3-5	WEI	ZHIQIANG	Tu-515-1-3
WANG	PENG	We-518ab-1-3	WEIß	LENNART	Th-515-2-4
WANG	RONGGUO	Th-520ad-3-1	WELLS	MICHAEL	Mo-525-4-4
WANG	SONGWEI	We-516ab-2-8	WERNER	BRIAN	Mo-514-1-3
WANG	WENXIN	Mo-520c-1-1	WETZEL	KYLE	We-514-1-3
WANG	WEN-XUE	Th-522-3-2	WHEELER	FRANK	Mo-516ab-3-11
WANG	XIANFENG	We-520ad-3-1	WHISLER	DANIEL	Mo-514-4-5
WANG	XIAOJUN	Th-519b-1-3	WHITCOMB	JOHN D	Tu-520f-3-3
WANG	XIAOXIA	Mo-522-3-6	WHITE	SCOTT R	We-519a-2-1 We-519a-1-1 We-519a-2-2
WANG	XIAOYAN	Tu-516ab-1-5	WIEDEMANN	MARTIN	Th-520ad-2-1
WANG	YA	Mo-519a-1-3	WIEGAND	NICLAS	Th-520f-3-4
WANG	YAN	Mo-515-4-4	WIELAGE	BERNHARD	Th-514-2-4
WANG	YANG	Fr-519a-1-1	WIENRICH	MALTE	Mo-520f-2-1 Th-519a-4-3
WANG	YOUQI	We-522-3-2 We-522-3-4	WILLIAMS	CHARLOTTE	Mo-520ad-4-1
WANG	ZUO JIA	Th-520f-3-6	WILLIAMS	JOHN	We-524c-3-4
WARD	CARWYN	We-518ab-3-1 We-518ab-3-2 Mo-524c-3-2	WILLIAMSON	DAVID M	We-524ab-2-3
WARD	IAN	Th-520be-2-2 Th-522-2-3	WILSON	PETER	Th-520ad-1-1 We-520c-2-3
WARDLE	BRIAN	Tu-519a-2-2 Fr-515-2-1	WISE	KRISTOPHER E.	Tu-520f-2-1
WARE	TAYLOR	Mo-519a-4-1	WISNOM	MICHAEL R	Tu-524ab-1-3 Th-518ab-1-3 Fr-524ab-1-4 Th-520c-2-2 We-520ad-2-1
WARGNIER	HERVÉ	We-516ab-2-3			Th-522-3-4 Th-522-3-5 Th-522-3-6
WARRIOR	NICHOLAS A	Fr-514-1-2	WITHERS	PHILIP	Tu-524c-3-2
WARRIOR	NICHOLAS	Fr-514-1-2	WITTICH	HANS	Mo-519b-3-3 Th-520c-2-3
WASCINSKI	LARISSA VON	Mo-524c-4-4	WITTRUP-SCHMIDT	JACOB	Fr-520ad-2-1
WASS	DUNCAN F	We-519a-1-3	WIZEMANN	GUSTAV MARTIN	We-516ab-2-6
WASTIELS	JAN	Fr-520c-1-1	WOLFAHRT	MARKUS	We-524c-1-1
WATANABE	NAOYUKI	Mo-522-3-5			Th-516ab-1-8
WATKINS	SIMON	We-520be-4-3	WONG	KING JYE	Mo-519b-3-2
WATTS	JOHN F.	Tu-520ad-2-1	WONGSRIRAKSA	PATCHARAT	Mo-520f-3-2
WEAVER	PAUL M	Tu-525-2-1 Tu-525-3-3 Th-520ad-2-3	WOO	KYEONGSIK	Th-525-3-2

WOOD	JEFF	Tu-524ab-1-2	YAMADA	TOMOKI	Fr-518ab-1-3
WOOD-ADAMS	PAULA	Th-515-2-2	YAMAGATA	СНІЕКО	Th-516ab-3-1
WORRALL	CHRIS M	Th-520be-1-4 Fr-514-1-3 We-516ab-2-1	YAMANE	MASACHIKA	We-516ab-1-16 Mo-516ab-3-10 Mo-516ab-4-9
WOWK	DIANE	Tu-516ab-1-13 Th-522-4-5 Tu-516ab-3-10	YAMASHITA	SHINICHIRO	Th-524ab-2-1
WOZNIAK	MACIEJ MIKOLAJ	Fr-520c-1-2	YAMAZAKI	HAJIME	Th-514-1-1
WU	CHANG-MOU	We-516ab-1-1 Mo-520be-3-4	YAN	MA	Th-514-2-1
WU	DEXIANG	Mo-516ab-3-6	YAN	YING	Fr-524c-1-4 Fr-522-1-4
WU	GUO	We-516ab-2-11	YAN	ZILI	Mo-520ad-1-1
WU	KUN	Th-519b-1-3	YANDOUZI	MOHAMMED	Th-518ab-1-4
WU	KUO-TING	We-520c-2-2	YANG	CHENG-CHOU ERIC	Mo-524c-3-5
WU	QING	Th-516ab-4-2	YANG	FUYAO	Th-519b-3-4
WU	TING-YU	Th-516ab-2-11	YANG	JINSHUI	Th-516ab-4-9
WU	WANGQING	Mo-524c-4-5	YANG	LEI	Fr-524c-1-4 Fr-522-1-4
WU	ZHANGMING	Tu-525-3-3	YANG	LIU	Mo-520be-4-4
WU	LIN-ZHI	Tu-525-1-4	YANG	QIAO JIE	We-520be-2-4
WUCHER	BENOIT	Mo-522-3-1	YANG	QINGDA	Tu-524ab-3-6
WYSOCKI	MACIEJ	Tu-518ab-3-5 Mo-520f-1-3	YANG	QINGSHENG	Mo-515-4-2
XAVIER	JOSÉ	Tu-524c-4-3	YANG	SEUNGHWA	Th-520f-4-5 Th-520f-4-4
XIA	К.	Fr-519b-2-1	YANG	SONG	Mo-515-2-4
XIAN	GUIJUN	Fr-520c-2-1 Fr-520c-2-2 Mo-519b-1-1	YANG	YANG	Fr-514-1-3
XIAO	JIAN	Mo-514-2-3	YANG	YU	Tu-524ab-4-4
XIAO	JIAYU	Th-516ab-4-9	YANG	YUE	Th-522-4-3
XIAO	JUN	We-520ad-3-1	YANG	YUQIU	Th-520f-2-1 Th-514-2-1 We-516ab-2-6 Mo-516ab-2-10 Tu-520ad-3-1
XIAO	XINRAN	We-519b-2-2			Mo-519b-1-1 Mo-519b-1-2 Mo-519b-1-3 Mo-519b-1-4
XIAOGUANG	NING	We-516ab-3-7	YANG	ZHENYU	Th-515-1-2
XIE	WEIHUA	Th-516ab-4-6 Mo-520c-1-4	YANG	ZHI	We-520f-2-1
XIN	XIAOJIANG JACK	We-522-3-4	YANG	ZHONG-JIA	Tu-520ad-2-2
XING	SULI	Th-516ab-4-9	YANG	HOSUNG	Th-515-3-6
XU	ANCHANG	Fr-522-1-2	YANG	L.	Th-516ab-1-15
XU	CHENGHAI	Th-516ab-4-6 Mo-520c-1-4	YANISHEVSKY	MARKO	Th-524ab-1-1
XU	XIAODONG	Tu-524ab-1-3	YASAEE	MEHDI	Th-524ab-2-3
XU	ZHILAN	Mo-516ab-2-10 Mo-519b-1-1	YASHIDA	HIROYUKI	Tu-516ab-2-6 Mo-516ab-1-11
XUE	BIN	Tu-524ab-3-3	YASHIN	VICTOR V.	Mo-519a-1-2
YA'AKOBOVITZ	ASSAF	Mo-519a-3-5	YASUDA	KENZO	Th-522-3-2
YAGI	SHINTARO	We-516ab-4-6	YE	LIN	We-520c-4-3

YE	TIANGUI	We-519b-4-4	YU	WOONG-RYEOL	Mo-520c-1-2 Th-522-1-3 Th-515-3-6
YEN	CHIAN FONG	We-522-3-4	YU	YALIN	We-515-1-3
YEN	CHIAN-FONG	We-522-3-2 Th-522-2-2	YU	YIN	Tu-522-3-2
YI	JIN WOO	We-515-4-3	YU	YING	Mo-520be-3-3
YI	MINGSEN	Tu-516ab-2-7	YU	ZHI-CHENG	Tu-525-3-2
YILDIZ	MEHMET	Th-516ab-1-4	YUAN	QIAO LONG	Th-520f-3-1
YIN	CHANGPING	Th-516ab-4-9	YUAN	ZESHUAI	Tu-516ab-3-14
YOKOZEKI	TOMOHIRO	Th-514-1-1 Th-516ab-1-13 Th-514-3-4	YUDHANTO	ARIEF	We-524ab-4-1
YONEDA	HIROYUKI	Fr-519b-1-3	YUQIU	YANG	Mo-516ab-1-8 Fr-520c-2-2 Th-520f-2-2
YONEYAMA	SATORU	Th-516ab-3-10	ZACCARIOTTO	MIRCO	Th-525-3-3 We-516ab-4-2
YONG	DAKYOUNG	Th-516ab-2-10	ZAHARIA	CATALIN	Mo-525-1-3 Mo-516ab-3-12
YOO	JAEJUNG	Th-516ab-1-8 Th-516ab-2-10	ZAINUDDIN	SHAIK	We-525-2-3 Th-516ab-3-3
YOO	JOO HWAN	Th-516ab-1-1	ZAKO	MASARU	Mo-524c-2-2
YOON	JIN-SAN	Mo-516ab-4-5	ZAPPALORTO	MICHELE	Fr-519a-1-2
YOON	SOON HO	We-516ab-2-2	ZAREMBA	SWEN	Mo-518ab-3-3 Th-518ab-2-3 We-515-3-4 We-520be-3-4
YORK	CHRISTOPHER B.	Fr-525-1-4	ZARRINBAKHSH	NIMA	Mo-516ab-4-8
YOSHIDA	KEISHIRO	Th-514-3-2 We-516ab-4-5	ZAVERL	MATTHEW J.	Mo-516ab-4-7
YOSHIKAWA	GAKU	Tu-520f-3-6	ZDERO	RAD	Mo-516ab-2-12
YOSHIKAZU	YUKIMOTO	Th-518ab-2-2	ZEBALA	WOJCIECH	Th-524c-3-4
YOSHIMURA	AKINORI	Th-516ab-1-13 Tu-524ab-4-5	ZENG	JINGCHENG	Th-516ab-4-9
YOSHIOKA	KENICHI	We-524c-2-2 Tu-518ab-3-6	ZENG	XUESEN	Mo-518ab-2-1
YOSHIYA	AKIHIKO	Fr-514-2-1	ZENKERT	DAN	Fr-520be-1-3 Th-519a-3-3 Mo-514-3-2
YOUNG	ROBERT	Mo-515-2-3	ZHANG	BAOYAN	Tu-518ab-4-1
YOUNIS	AHMED ABDEEN	Th-519b-1-2			Fr-519a-1-1
YOURDKHANI	MOSTAFA	Tu-515-1-4	ZHANG	CANHUI	We-520be-1-2
YOUSAF	ZESHAN	Tu-524c-3-2	ZHANG	DAXU	Tu-516ab-1-5
YOUSEFI	NARIMAN	Th-516ab-2-1 Th-516ab-2-2 Th-516ab-2-5	ZHANG	DI	Fr-519b-1-2 Tu-520be-2-3
YOUSEFPOUR	ALI	Th-520be-1-1 We-520ad-2-2 Th-520ad-2-4	ZHANG	HAN	Th-514-2-2
YU	HANA	Th-518ab-1-3	ZHANG	HONGTAO	Th-520ad-3-1
YU	HUASHUN	Th-519b-3-3	ZHANG	HUA	We-516ab-1-10
YU	JI HOON	Mo-516ab-4-5	ZHANG	JIANCHUN	Mo-520ad-1-1
YU	KAI	Mo-519a-3-1	ZHANG	JIANWEI	We-515-4-1
YU	SUYOUNG	Th-520f-4-5 Th-520f-4-4	ZHANG	JINGJING	Th-519b-3-3
YU	TAO	Mo-516ab-2-8	ZHANG	JUNQI	We-516ab-4-4
YU	TIAN-HONG	Th-524c-4-1 Tu-516ab-3-5	ZHANG	KUANGYI	We-519b-1-4

ZHANG	KUNYU	Mo-520ad-4-2				ZHU	JIAN	Tu-519a-1-4		
ZHANG	LI	Tu-524c-2-2				ZHU	DEJU	Mo-522-2-1		
ZHANG	LIJUN	Tu-524c-3-1				ZHU	GEORGE ZHENGHONG	Tu-515-2-2	Mo-520f-4-5	Th-516ab-2-6
ZHANG	MINGFU	Th-514-1-4				ZHU	JIAHUA	Tu-519a-3-5		
ZHANG	PAN	Tu-516ab-3-6				ZHU	JINCHUN	Th-516ab-2-7	Mo-525-4-5	
ZHANG	RUBY	Th-519b-2-4				ZHU	MINGMING	Th-516ab-4-2		
ZHANG	SHIJIE	Mo-515-3-4				ZHU	SHAN	Tu-524c-2-2		
ZHANG	SHUFENG	Tu-514-2-3				ZHU	SHENMIN	Tu-520be-2-3		
ZHANG	WANG	Tu-520be-2-3				ZHU	YUNTIAN T.	Th-519a-2-3		
ZHANG	XIAO JING	Th-522-3-3				ZIKE	SANITA	We-516ab-4-10		
ZHANG	XINJIANG	Th-520ad-4-4				ZIMMERMANN	KRISTIAN	We-514-3-2		
ZHANG	XUEXI	Th-519b-4-1				ZINOVIEV	RADII SERGEEVICH	Tu-516ab-1-11		
ZHANG	YI	We-524c-3-2				ZITOUNE	REDOUANE	Tu-515-4-2	We-524ab-1-1	We-518ab-4-1
ZHANG	ZHAOFU	Tu-515-1-3				ZOBEIRY	NAVID	Tu-524ab-1-3	Mo-520f-2-4	
ZHANG	ZHIYUAN	We-516ab-2-6 Tu-520ad-3-1	Mo-516ab-3-3			ZUCCHELLI	ANDREA	Mo-524ab-3-3		
ZHANG	ZHONG	Mo-515-3-3								
ZHANG	ZHONGYI YI	Th-519a-3-2								
ZHANG	ZUOGUANG	Th-520ad-1-2								
ZHANG	ZUOGUANG	Th-516ab-4-2 Tu-520ad-2-2	Mo-515-2-1	Mo-515-2-2	Tu-518ab-4-2					
ZHAO	XINMING	We-520ad-1-3								
ZHAO	XINQING	Tu-524c-2-2								
ZHAO	YAN	Tu-524c-3-1 Th-519a-1-4	We-520f-4-2	Mo-515-4-3	Mo-515-4-4					
ZHAO	YINZI	Th-516ab-4-8								
ZHEFENG	YU	We-516ab-3-5								
ZHENG	QINGBIN	Th-516ab-2-1								
ZHENG	YONGTING	Th-524c-2-1								
ZHENG	YUDONG	Mo-525-1-1								
ZHOU	BINQUAN	Fr-520ad-1-1								
ZHOU	GANG	Th-524ab-1-4								
ZHOU	JIN	Mo-522-3-4								
ZHOU	MIN	Mo-514-2-4								
ZHOU	YI	Tu-520be-2-1								
ZHOU	YUANXIN	Th-516ab-3-3								
ZHOU	ZHENGWEI	We-515-1-4								
ZHOU	ZHI	Tu-519a-1-3								

ICCM20 Copenhagen Denmark

Welcome to the ICCM20 in Copenhagen, 19-24 July 2015!

Copenhagen - the capital of Denmark

Copenhagen is a vibrant metropolis, the gateway to Scandinavia and amongst the safest and cleanest cities in the world. Copenhagen is very easy to get to and is, with one of the most efficient transport systems in the world, also very easy to get around in.

As the oldest monarchy in the world and one of the world's greatest design capitals the city offers a wide variety of cultural experiences and stunning architecture within its compact city centre.

With the dates of the ICCM20 being in the summer month of July the delegates will be visiting Copenhagen at one of the most attractive and pleasantly warm times of year.

Copenhagen Airport is Northern Europe's main traffic hub with direct flights from approximately 140 destinations all over the world. The city centre can be reached within 12 minutes by metro or train.

Bella Center - the venue of ICCM20

The venue for ICCM20 is the Bella Center. Bella Center is a large and magnificent, ultramodern, state-of-the-art facility which is situated just 5 minutes from Copenhagen International Airport and 9 minutes from the city centre by metro.

Scientific program

The overall theme for the ICCM20 will be "Sustainable Composite Solutions to Global Challenges". The scientific program will cover all relevant aspects of the science and technology of composite materials and their application.



Social program and tours

A range of social opportunities for networking and for enjoying Wonderful Copenhagen and the surroundings will be provided. The social program currently include

- » Welcome Reception in Tivoli Gardens in the heart of Copenhagen.
- » Conference Dinner with a Midsummer Theme in Bella Center.
- » Pre and post congress tours, sightseeing tours as well as a program for

accompanying persons.

Organization of the ICCM20

The ICCM20 is organized by the Scandinavian Organizing and Scientific Committee which encompasses Aalborg University (AAU), the Technical University of Denmark (DTU), the Danish Plastics Federation (Danish composites industry), along with Swedish and Norwegian key researchers in the field of composite materials, and finally the professional congress organizers MCI Copenhagen.

www.iccm20.org

WE LOOK FORWARD TO SEEING YOU IN COPENHAGEN FOR THE ICCM20!

Ole Thybo Thomsen, ICCM General Chair (University of Southampton, UK & Aalborg University, Denmark)

Christian Berggreen, ICCM20 Co-Chair, Exhibitor and Sponsor Program (Technical University of Denmark)

Bent F. Sørensen, ICCM20 Co-Chair, Scientific Program (Technical University of Denmark)

20th International Conference on Composite Materials – ICCM20 2015

19-24 July 2015 - Copenhagen, Denmark



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