

SYNTHESIS AND CHARACTERIZATION OF WASTE POLYETHYLENE-GRAFT-AA/MMT SUPERABSORBENT COMPOSITE

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Polyethylene has been used in many fields as its excellent physical and chemical properties, and most of its products are used as disposable things. The reclamation and recycling of waste polymers is a very important objective, to which a great deal of attention has been paid in recent years, especially in the aspect of finding a way to convert them into functional polymers. [1]

Based on the previous work of our group [2, 3], a novel superabsorbent composite was synthesized with waste polyethylene film (WPEF), acrylic acid (AA) and sodium type montmorillonite (Na-MMT) through emulsion polymerization. Structure of the composites was characterized by Fourier transform infrared spectroscopy (FTIR) and microscope (SEM). Effects of such factors as mass ratio of PE and AA, initiator amount, montmorillonite amount and crosslinker amount on the absorbency of the nanocomposites were investigated.

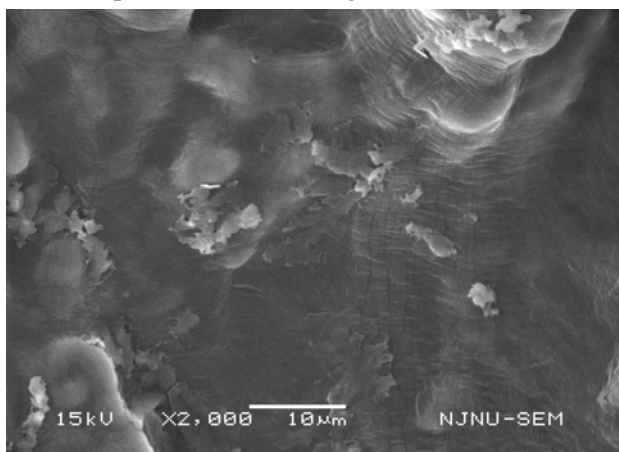


Fig.1 SEM micrograph of PE-AA composite.

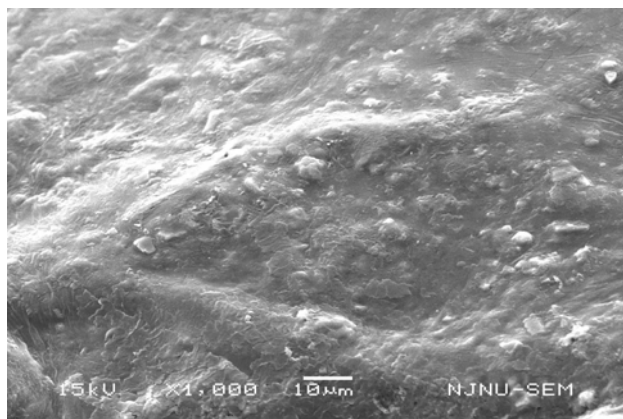


Fig.2 SEM micrograph of PE-AA/MMT composite.

The results show that acrylic acid grafted onto the polyethylene chain. Montmorillonite dispersed in the composite, and the addition of proper amount of MMT increased the absorbency of the composite. The introduction of PE not only decreased the production cost, but increased the water retention ability of the composite under high temperature.

References

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