

## **POLYMER NANOCOMPOSITES: RECENT ADVANCES**

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The field of polymer nanocomposites is stimulating both fundamental and applied research because these nanoscale materials often exhibit physical and chemical properties that are dramatically different from conventional microcomposites. A large number of nano particles, layers silicates and polymeric whiskers are being used for the preparation of nano composites. Since the Toyota research group's pioneering work on nylon6/layered silicate nano composites, polymer nanocomposites containing layered silicates have attracted much attention. The polymer/layered nanocomposites can exhibit increased modulus, decreased thermal expansion coefficient, reduced gas permeability, increased solvent resistance and enhanced ionic conductivity when compared to the polymer alone. In the proposed talk, the different preparation techniques for polymer nanocomposites will be discussed. The role of various surfactants in improving the polymer/filler interaction will be reviewed. The various characterization techniques for nanocomposites will be addressed. In the case of semi crystalline polymers the role of crystallization on the the intercalation and exfoliation will be discussed. The important properties of nanocomposites will also be presented. Finally recent developments in cellulose nanocomposites and bio-nanocomposites will also be described.

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