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Polymer nanocomposites: from fundamental research to specific applications

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Abstract

Nanocomposite materials consisting of polymeric matrix materials and natural or synthetic layered minerals like clays can be prepared by adjusting the interaction enthalpy between all components using special compatibilisation agents for the two intrinsically non-miscible materials. As a general route block- or graft copolymers combining one part of the polymer identically and/or completely miscible with the organic polymer (matrix compound) and another part compatible/miscible with the natural mineral can be used. This compatibilisation leads to a separation of the mineral into single particles and a subsequent homogeneous incorporation of these particles into the polymer matrix material. Application examples of these technique will be discussed as well as an outlook to nanocoposites with different particle size, nature and shape and their properties with will be given.



Keywords

Nanocomposites; Clay; Block copolymers; Compatibilisers; Functional fillers

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