Polymer-clay nanocomposites: Preparations, properties and applications

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Abstract: Polymer-clay nanocomposites (PCN) is an important class of nanomaterials developed during last 20 years having wide application in diverse fields like automotive parts, coating and packaging technology, insulation, building materials, biotechnology and environmental engineering [1, 2]. The main classes of clay used in preparation of PCN include Montmorillonite, vermiculite, sepiolite, laponite, bentonite and attapulgite. These clay nanoparticles after suitable processing are used as fillers or reinforcing agents in various polymers to form polymer nanocomposites. The diverse application of PCN is attributed to modification and improvement in various mechanical properties like thermal stability, flame retardancy, impact resistance, barrier and anticorrosive properties. In the present work PCN is prepared using montmorillonite clay and the effect of clay loading on polymer (polypropylene) is studied for property enhancement. Also current developments and applications of polymer-clay nanocomposites in various fields such as decontamination as well as remediation of water, air and soil systems are highlighted.

References:

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