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# SYNERGISTIC EFFECTS OF NANOCLAY AND SHORT GLASS FIBRES ON MECHANICAL AND FRACTURE PROPERTIES OF POLYPROPYLENE COMPOSITES

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**Summary.** *In recent years polymer/layered silicate (PLS) nanocomposites have attracted great interest, both in industry and in academia, because they often exhibit remarkable improvement in materials properties when compared with virgin polymer or conventional micro and macro-composites. These improvements can include higher module, increased strength and heat resistance, decreased gas permeability and flammability, and increased biodegradability of biodegradable polymers. However these properties are strongly influenced by how the clay is dispersed in the polymer.*

*In this study the synergistic effects in PP+short glass fibre (SGF)+nanoclay systems in the mechanical and fracture properties in injection moldings were analyzed.*

*The materials used were a polypropylene homopolymer, nanoclay (montmorillonite layer silicate) for polyolefin nanocomposites in percentages of 2%, 6% and 10%, and a polypropylene homopolymer with content of 10% and 30% of glass fiber reinforcement.*

*The various materials systems were characterized in terms of assessed by impact Charpy tests and fracture tests under quasi-static conditions. The microstructure of the moldings was characterized by polarized light microscopy and DSC, while dispersion of clay was assessed by TEM and XRD.*

*The moulding properties were determined by the incorporation of nanoclay and SGF, and by the processing conditions. The influence of the microstructure of the moldings and the synergistic effect of the nano- and micro-reinforcements were also observed.*