

Elaboration and Characterization of PP/TiO₂ Composites

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Abstract : The aim of present work is to characterize the PP/TiO₂ blends as composites, and study the effect of TiO₂ on properties of different compositions and the evaluation of the effectiveness of the method used for filler treatment. Nanocomposite samples were synthesized by molten route in an internal mixer. The TiO₂ nanoparticles were treated with stearic acid in order to obtain a good dispersion, and the demonstration of the effectiveness of the treatment on the morphology and roughness of the nanofiller was established by microstructural analysis by FTIR and AFM. The various developed nanocomposite compositions were characterized by different methods; i.e. FTIR, XRD, SEM and optical microscopy. Rheological, dielectric and mechanical studies were also performed. The results showed a remarkable increase in the impact strength results which increased about 39% compared to neat PP. The rheological study showed an increase in the fluidity in all developed composite compositions, involved by the good dispersion of TiO₂ particles.

Keywords : composites, PP, TiO₂, comixing, mechanical treatment

Conference Title : ICCSE 2015 : International Conference on Chemical Science and Engineering

Conference Location : Istanbul, Türkiye

Conference Dates : December 21-22, 2015