Effect of nanoclay content and compatibilizer on viscoelastic properties of montmorillonite/polypropylene nanocomposites

Surface morphology. Dispersion of nanoclay in the composites with and without compatibilizer. *Viscoelastic behavior.*

Wide range of Temperature & Frequencies.

Objective: Atomic Force Microscopy (AFM): it is used to precise topographic images of a sample by scanning the surface with a nanometer-scale probe

Minimal sample preparation, in air or liquid environment!

Instrumentation: AFM used in the study is the INNOVA SPM, Bruker AXS Company.

The scan conditions are chosen in order to obtain a stiffness contrast in which the brighter areas are stiffer than the darker areas. Thus, the nanoclay located on the surface appears brighter than the polypropylene matrix.

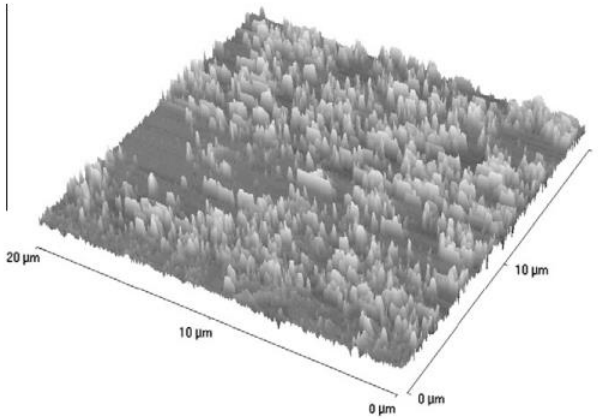

Fig. 9. Height contrast AFM images of $PPN_{9\text{-}UC}$ showing uniform distribution of nanoclay in PP matrix.

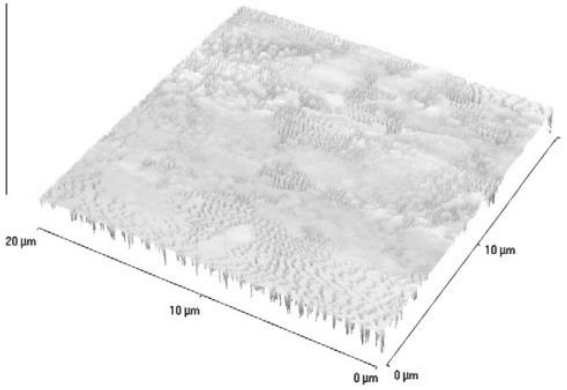

Fig. 10. Height contrast AFM images of PPN_{9_C} showing distribution of nanoclay in PP matrix.

10 mm x 10 mm x 3 mm injection molded nanocomposite specimens were used for analysis.

Conclusion: Nanoclay is not distributed uniformly and tends to be more aggregated in nanocomposites with compatibilizers. *This suggests that the addition of compatibilzer, m-TMIg-PP, is aiding to clustering of nanoclay instead of helping in uniform dispersion*

Reference: G.S. Venkatesh, Effect of nanoclay content and compatibilizer on viscoelastic properties of montmorillonite/polypropylene nanocomposites, (2012), 285-291, India.

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