

Synthesis, Characterization, and Physico-Chemical Properties of Nano Zinc Oxide and PVA Composites

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Abstract : Polymer nanocomposites represent a new class of materials in which nanomaterials act as the reinforcing material in composites, wherein small additions of nanomaterials lead to large enhancements in thermal, optical, and mechanical properties. A boost in these properties is due to the large interfacial area per unit volume or weight of the nanoparticles and the interactions between the particle and the polymer. Micro-sized particles used as reinforcing agents scatter light, thus, reducing light transmittance and optical clarity. Efficient nanoparticle dispersion combined with good polymer-particle interfacial adhesion eliminates scattering and allows the exciting possibility of developing strong yet transparent films, coatings and membranes. This paper aims at synthesizing zinc oxide nanoparticles which are reinforced in poly vinyl alcohol (PVA) polymer. The mechanical properties showed that the tensile strength of the PVA nanocomposites increases with the increase in the amount of nanoparticles.

Keywords : glutaraldehyde, polymer nanocomposites, poly vinyl alcohol, zinc oxide

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