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Effects of Multi-walled Carbon Nanotubes on the Dielectric and Microwave Properties of Natural Rubber-based Composites

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FULLERENES NANOTUBES AND CARBON NANOSTRUCTURES

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Abstract

In this study, the influence of carbon nanotubes (CNT) in concentrations from 2 to 10 phr on the dielectric (dielectric permittivity, dielectric loss angle tangent) and microwave (reflection coefficient, attenuation coefficient, shielding effectiveness) properties of nanocomposites on the basis of natural rubber has been investigated in the wide frequency range (2-12 GHz). Some additional investigations on the morphology and microstructure of the CNT used and studied composites have been carried out by transmission electron microscopy (TEM) and selected area electron diffraction (SAED). The results achieved allow recommending carbon nanotubes as filler for natural rubber based composites to afford specific dielectric and microwave properties.

Keywords

Author Keywords: multi-walled carbon nanotubes; dielectric and microwave characteristics; Rubber nanocomposites

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