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A novel conducting nanocomposites containing phenolic resin-carbon nanoparticles for electromagnetic wave shielding effectiveness at microwave frequency

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Abstract
The microstructure of phenolic resin reinforced carbon black (CB) nanoparticles was examined by scanning electron microscopy. The thermal stability of the nanocomposites was examined by means of isothermal resistivity change at 100°C. Electromagnetic interference (EMI) response of conducting phenolic-CB nanocomposites in the frequency range from 1 GHz to 12 GHz has been studied. In the microwave range from 8 to 12 GHz conducting nanocomposites shows a shielding effectiveness in the range 30-40 dB. The highest EMI of nanocomposites was 55 dB for CB12 sample which is realistic for an industrial application. The results of this study demonstrate the high possibility of using the proposed nanocomposites as electronic conductive fillers in polymer package and EMI shielding effectiveness at microwave frequency. Copyright © 2009, Inderscience Publishers.

Author Keywords
Conducting polymer nanocomposites; Electromagnetic shielding; Network structure

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