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Polymeric nanocomposites for electromagnetic radiation absorbing-a challenge of environment pollution to health hazards

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expertise in evaluation and passion in developing radiation

Abstract

The growth in the application of electronic devices across a broad spectrum of military, industrial, commercial and consumer sectors has created a new form of pollution known as radio frequency interference (RFI) or electromagnetic (EM) radiation or EM interference (EMI) that can cause interference or malfunctioning of equipment. Those EM radiation consisting many unwanted radiated signals which not only degrade system or equipment performance, those EM radiation are doing serious effect on human health especially, on nervous system and brain. The possible or suggested effects of EMF on the body are Parkinson's disease, Alzheimer's disease, Cancer, tumors, Headache, fatigue, neurological disorder, etc. One of the simplest methods is to reduce electromagnetic signal by shielding (Fig. 1). Electrical conductive polymeric nanocomposites filled with carbon based conductive filler are becoming popular for microwave radiation absorbing materials because of their light weight, high flexibility, anti-corrosive, easy fabrication into intricate shape by common processing techniques and cost effectiveness. Currently, carbon materials, including carbon fibers, carbon nanotubes (CNTs) and graphene have played a leading role in the investigation and application of microwave absorbing materials due to their low specific mass and high aspect rations, which results in high electromagnetic losses at low filler content along with a reduction of thickness and weight (Fig. 2a-b). In addition, electrical, thermal conductivity as well as microwave absorbing efficiency or shielding effectiveness are strongly depends on type of polymer, filler and its concentration, filler dispersion, polymer blends, processing parameter etc..

Biography:

Narayan Ch. Das has his expertise in evaluation and passion in developing radiation shielding materials for reduction of environmental pollution and protection our health from radiation. He has developed different kind of polymer based light weight , flexible and cost effect nanocomposites. Those nanocomposites are highly electrically and thermally conductive and and cam be used a commercial materials for outstanding electromagnetic radiation materials. His interdisciplinary research interests include nanomaterials, polymer nanocomposites, rheology and processing of rubber, biomaterials, carbon dots, membrane for water purification, food packaging, SAXS and SANS.

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