Review

Recent Advances in Electromagnetic Interference Shielding Properties of Metal and Carbon Filler Reinforced Flexible Polymer Composites: A Review

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Recent Advances in Electromagnetic Interference Shielding Properties of Metal and Carbon Filler Reinforced Flexible Polymer Composites: A Review

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Abstract

The rapid proliferation and elevated usage of electronic devices have led to a meteoritic rise in electronic pollutions such as electronic noise, electromagnetic interference (EMI) and radiofrequency interference which leads to improper functioning of electronic devices. Metals and their alloys can serve as the best EMI shielding materials but their heavy weight, high cost and low corrosion resistance have limited their applications in EMI shielding. The emergence of flexible polymer composites have substituted the metal and metal alloy based EMI shielding materials due to their unique features such as superior electrical, dielectric, thermal, mechanical and magnetic properties that are highly useful for suppressing the electromagnetic noises. In this review article, the EMI shielding effectiveness of flexible polymer composites comprising of metals and various forms of carbon nanofillers such as carbon black, carbon nanofibers, carbon nanotubes, graphite, graphene, graphene oxide, graphene nanosheets, graphene nanoribbons and graphene nanoplatelets have been deeply reviewed.

Keywords: EMI shielding effectiveness; flexible polymer composites; metals; carbon nanofillers