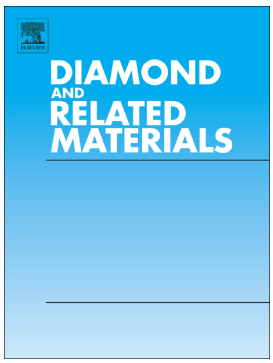

Enhanced microwave absorption property of Reduced Graphene Oxide (RGO)–Strontiumhexa–Ferrite (SF)/Poly (Vinylidene) Fluoride (PVDF)

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Enhanced microwave absorption property of Reduced Graphene Oxide (RGO)–Strontiumhexa –ferrite (SF)/ Poly (Vinylidene) Fluoride (PVDF)

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Abstract:

Enormous growth in the use of electronic gadgets presents a challenge to develop efficient Electromagnetic interference (EMI) shielding materials specifically using composites with properties such as light weight and high shielding due to absorption. In the present work we have synthesized a composite material with three components; Reduced Graphene Oxide (RGO) and Strontium Ferrite ($SrFe_{12}O_{19}$) (SF) bound together by polymer Poly (Vinylidene) Fluoride (PVDF). Composite RGO/SF (RGOSF) was prepared by facile one port chemical reduction method. Surface anchoring of ~500 nm of magnetic particles over the graphene sheet was confirmed by Field Emission Scanning Electron Microscopy (FESEM) and Transmission Electron Microscopy (TEM). Crystal structure of SF particles was analyzed before and after composite formation with RGO. Effective crystallite size was estimated from both XRD and Raman Spectroscopy which showed similar trend moving from SF to RGOSF to RGOSFPVDF. Polymer composite films of RGOSFPVDF were prepared by hot pressing. Both real and imaginary part of magnetic and dielectric parameters were studied. It was observed that enhancement of interfacial polarization and anisotropic heat loss in PVDF matrix was generated