

Preparation and thermal and electrical properties of Poly (methylmethacrylate) / Highly reduced Graphene oxide nanocomposite by solution blending method

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Graphene/polymer nanocomposites have been in the focus of many investigations in the last few years, due to their exceptional mechanical, thermal and electrical properties. The PMMA/graphene nanocomposites exhibit dramatic increase in modulus, ultimate strength and thermal stability, which are comparable to that of single walled carbon nanotube composites. The composites also exhibit a sharp rise in glass transition temperature.

In the present work is focused on the preparation of Poly (methylmethacrylate)/highly reduced graphene oxide (PMMA/HRG) nanocomposites via solution blending of PMMA with various HRG loadings. The electrical conductivity, mechanical properties and thermal stability of the prepared composites were studied. The electrical conductivity of nanocomposites reached a maximum of about 29.02 S/m at 5 wt% of HRG loadings. The results of nanocomposites confirm that the higher aspect ratio of graphene sheets played an important role to forming conductivity network in PMMA matrix.