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ABSTRACT:

We present a facile, environmentally friendly approach to fabricate high-radiation-resistance poly(methyl methacrylate)/reduced graphene oxide (PMMA/RGO) composites through latex mixing of anionic PMMA latex particles and graphene oxide dispersion followed by coagulation and in situ hydrazine reduction. Morphological observation reveals the highly uniform dispersion of RGO nanosheets in the PMMA matrix. The dynamic mechanical properties demonstrate that the radiation-induced cross linking and chain scission of PMMA chains are significantly delayed in PMMA/RGO nanocomposites compared with that in pure PMMA irradiated at low and high doses, respectively. Additionally, the incorporation of RGO nanosheets delays the thermal oxidative degradation of the PMMA matrix. This delay is attributed to the fact that RGO can act as a radical scavenger, as confirmed by electron paramagnetic resonance spectroscopy analysis. The physical barrier effect of

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