

Abstract Submitted
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Fluorescence in nanocomposites based on polyethylene oxides and block copolymers of polyethylene oxide-polypropylene oxide loaded with rare earth doped fluorides BRIAN YUST, Univ of Texas, Pan American, FRANCISCO PEDRAZA, DHIRAJ SARDAR, University of Texas at San Antonio, AARON SAENZ, MIRCEA CHIPARA, Univ of Texas, Pan American — Rare earth doped fluoride nanoparticles with a size of about 25 nm have been synthesized by a solvothermal process. Polymer-based nanocomposites, containing various weight fraction of nanofillers, have been obtained by dissolving the polymeric matrix (polyethylene oxide) within a solvent (deionized water), adding the nanoparticles, sonicating the mixture, and finally removing the solvent. The complete removal of the solvent has been confirmed by Thermogravimetric Analysis. Additional information about the thermal features have been obtained by Differential Scanning Calorimetry, Wide Angle X-Ray Scattering, FTIR, UV-Visible, and Raman. The effect of the loading with nanoparticles on the glass, crystallization, and melting transition temperatures of the polymeric matrix are reported. Fluorescence of rare earth doped nanoparticles dispersed within the polymeric matrix has been tested by laser spectroscopy. The dependence of fluorescence intensity on the concentration of nanofillers and on temperature in the range 300 to 400 K is analyzed.

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