

Synthesis of $\text{KCaVO}_4\text{:Sm}^{3+}$ /PMMA Luminescent Nanocomposites and Their Optical Property Measurements

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Abstract : The present work reports synthesis of nanocomposites (NCs) of phosphor ($\text{KCaVO}_4\text{:Sm}^{3+}$) embedded poly(methylmethacrylate) (PMMA) using solution casting method and their optical properties measurements for their possible application in making flexible luminescent films. X-ray diffraction analyses were employed to obtain the structural parameters as crystallinity, shape and size of the obtained NCs. The emission and excitation spectra were obtained using Photoluminescence spectroscopy to quantify the spectral properties of these fluorescent polymer/phosphor films. Optical energy gap has been estimated using UV-VIS spectroscopy while differential scanning calorimetry (DSC) was exploited to measure the thermal properties of the NC films in terms of their thermal stability, glass transition temperature and degree of crystallinity etc.

Keywords : nanocomposites, luminescence, XRD, differential scanning calorimetry, PMMA

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