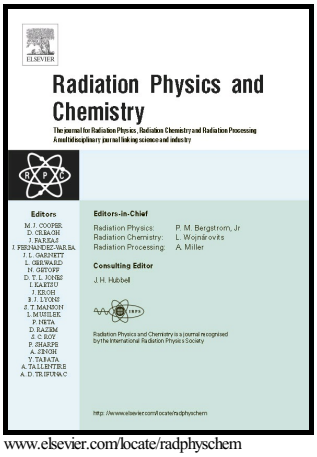

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PII: S0969-806X(16)30395-4
DOI: http://dx.doi.org/10.1016/j.radphyschem.2016.09.022
Reference: RPC7279

To appear in: *Radiation Physics and Chemistry*

Received date: 10 March 2016
Revised date: 8 August 2016
Accepted date: 17 September 2016

Cite this article as: M.R. Ambika, N. Nagaiah, V. Harish, N.K. Lokanath, M.A Sridhar, N.M. Renukappa and S.K. Suman, PREPARATION AND CHARACTERISATION OF ISOPHTHALIC-Bi_2O_3 POLYMER COMPOSITI GAMMA RADIATION SHIELDS, *Radiation Physics and Chemistry* http://dx.doi.org/10.1016/j.radphyschem.2016.09.022

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Abstract

Bi_2O_3 filled Isophthalic resin based polymer composites of different weight % (0, 5, 10, 20, 30, 40, 50 & 60) were fabricated by open mould cast technique. Gamma attenuation study was carried out using NaI (Tl) gamma ray spectrometer for Cs-137. The shielding parameters such as attenuation coefficient, HVL & λ were investigated. The distribution of the filler within the matrix was studied using Scanning Electron Microscopy. X ray diffractometer and Fourier Transform Infrared Spectroscopy were employed to study the structural changes if any. The thermal stability and mechanical strength of the composites were investigated using TGA & UTM respectively. Dielectric properties and AC conductivity were also studied using LCR meter. The composites are found to be thermally stable upto 200^{o}C. There were no such structural changes observed and all the composites show very low conductivity. The mechanical strength of the composites was found to increase upon adding the bismuth oxide with a slight decrease when the concentration of the filler exceeds 40 wt %. Attenuation results reveal that, the shielding efficiency increases with the increase of the filler wt % and are comparable to those of the conventional