



ChemTech

International Journal of ChemTech Research

CODEN (USA): IJCRGG, ISSN: 0974-4290, ISSN(Online):2455-9555
Vol.10 No.13, pp 179-189, 2017

Characterization and thermoluminescence studies of CaSO₄:Tm,Si phosphor under X-ray excitation.

Resmi G.Nair^{1*}, K.Madhukumar², C.M.K.Nair³, S. Jayasudha⁴, T. S. Elias⁵

^{1,2,3,4}Mahatma Gandhi College, Kesavadasapuram, Pattom Palace P.O.,
Thiruvananthapuram-695004, India

⁵State Institute of Cancer Research, Medical College P.O., Thiruvananthapuram-
695011, India

Abstract : CaSO₄:Tm phosphor co-doped with silica prepared through solid state synthesis were subjected to a detailed thermoluminescence analysis. Preliminary studies were done for the structural characterization of the phosphor material. PL spectra were recorded to understand the emission mechanism. TL characteristics of the phosphor were recorded under X-ray excitations. The most noticeable feature of the CaSO₄:Tm,Si phosphor is the peak emission temperature around 365°C with a fairly large intensity of emission. The dosimetric emission temperature is very high compared to that of the commercially available standard phosphor CaSO₄:Dy. The fading was found to be around 7% over a period of 2 months. The observed properties of the Si co-doped CaSO₄:Tm phosphor made it suitable for its use in various radiation dosimetry applications.

Keywords : Thermoluminescence, Environmental Radiation Dosimetry, Photoluminescence.

Resmi G.Nair *et al* /International Journal of ChemTech Research, 2017,10(13): 179-189.
