



Spectroscopic investigation of nanocrystalline Gd₂O₃S for low dose X-Ray imaging applications

Dinesh Sivalingama, T Prakashb and G Devanand Venkatasubbua*

^aDepartment of Nanotechnology, SRM Institute of Science and Technology, Kattankulathur, Chennai, Tamil Nadu 603203.

^bNational Centre for Nanoscience and Nanotechnology, University of Madras, Guindy Campus, Chennai, Tamil Nadu 600025.

Abstract:

Recent research in the field of phosphors and scintillators for radiation detectors for medical, industrial and scientific imaging and further development and exploitation of powerful X-ray sources such as e.g. synchrotron radiation. Thus, an intense research and development continues to explore new phosphor and scintillation materials or the optimization of the current ones taking advantage of new technological methods for their preparation. Nanocrystalline Gd₂O₃S scintillator with structures were successfully synthesized through precipitation process and subsequent calcination for X-ray imaging detectors. In this work, a simple precipitation process was carried out using diethanolamine as a precipitant to prepare nanocrystalline Er doped Gd₂O₃. Scintillation properties such as luminescent spectra, light intensity and decay time were measured for the synthesized powder. The sample calcined at 400 - 900°C showed the highest light intensity. The scintillator emitted a strong red light at near 610 nm under photo and X-Ray luminescence for its potential X-Ray imaging detector applications.

Biography:

Dinesh Sivalingam, Department of Nanotechnology, SRM Institute of Science and Technology, Kattankulathur, Chennai, Tamil Nadu 603203,



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