

عنوان مقاله:

Preparation and Characterization of ZnO and CdWO₄ Nanopowders for Radiation Sensing

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خلاصه مقاله:

Today, there is a great request for radiation detection in medical and industrial fields. Zinc oxide (ZnO) and cadmium tungstate (CWO) are two types of scintillator perspective due to their useful features such as high density, large Z, and efficient scintillation output. In this study, ZnO and CWO nanopowders were synthesized by the simple sol-gel method, and ZnO and CWO films were prepared by spin coating technique on glass substrates. Samples were characterized by X-ray diffraction, transmission electron microscopy, and X-ray induced luminescence measurements. XRD analysis showed that ZnO and CWO powders were well synthesized with wurtzite and monoclinic wolframite structures, respectively. It was observed that the particle diameters for ZnO and CWO nanopowders are ۲۲ and ۱۰۰ nm, respectively. The scintillation response of samples was measured using a ۲۴۱Am alpha source. Compared to ZnO, CWO nanopowders showed prominent luminescence properties with higher radiation sensitivity for applications in fields of radiation detection.

کلمات کلیدی:

radiation, Sol-gel, Powder, Nanostructure

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