

عنوان مقاله:

Co-doping effects in CdWO₄ scintillator thin film as alpha counters: Ag and Gd case

محل انتشار:

دومین کنفرانس بین المللی تحقیقات پیشرو دانشجویان نانو فناوری (سال: 1402)

تعداد صفحات اصل مقاله: 13

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خلاصه مقاله:

The flexible CdWO₄ (CWO)-۲۲Wt. % polyester (PES) and CWO: ۲۵۵:at. Ag, ۲۵۵:at. Gd (co-doped CWO)-۲۲Wt. % PES thin films were prepared by direct mixing technique. The composition of thin films was studied by EDAX analysis. FE-SEM and EDAX-map images exhibited a uniform distribution of CWO and codoped CWO nanoparticles (NPs) in PES. The precision of the Monte Carlo technique for the computation of alpha particle trajectories in CWO-۲۲Wt. % PES and co-doped CWO-۲۲Wt. % PES thin films were ۵۵ and ۵۳, respectively, which approximately agreed with FE-SEM images. The band gap energy of co-doped CWO increased based on DRS results. The scintillation responses of thin films were investigated using a ۲۴۱Am source. Co-doping increased the absolute counting efficiency (up to ۴%) and decreased the energy resolution (up to ۳%). These results indicate that the manufactured nanocomposites could be promising candidates for ionizing radiation detectors, radiometric monitoring, and light-emitting diodes (LEDs).

کلمات کلیدی:

CWO, Band gap, Nanocomposite, Scintillation response, Absolute efficiency

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