

عنوان مقاله:

Synthesis and Characterization of Mercuric Sulfide Nanoparticles Thin Films by Pulsed Laser Ablation (PLA) in (Distilled Water (DW

محل انتشار:

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خلاصه مقاله:

Thin films of meta-cinnabar mercuric sulfide (β -HgS) nanoparticles (NPs) was prepared by pulsed laser ablation (PLA) utilizing a pellet of cinnabar mercuric sulfide (α -HgS) was immersed in distilled water (DW). Q-switched Nd:YAG laser of 1064 nm wavelengths with repetition rate (1hz) and fluency (1.5 J/cm²) applied for ablation. Structural, morphological and particle sizes of the β -HgS NPs are investigated by analyzing XRD, AFM, SEM and TEM measurements. Their crystal structure is transformed from hexagonal (wurtzite) of the α -HgS target material to cubic (zinc blende) β -HgS NPs. The optical properties of the β -HgS NPs are measured by UV-visible spectrophotometer. The direct band gap is calculated to be (2.45eV) of small particles (4-6.2nm) moreover, the band gap value of smallest particles (1-4nm) is (3.47eV) according to the optical transmission spectra

کلمات کلیدی:

Pulsed laser ablation, Nanocrystalline, Mercury sulfide, Cinnabar, Metacinnabar

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