

Chalcogenide nanostructures: Topography, synthesis, properties, and applications

Abstract

High-quality Cadmium sulfide (CdS) nanostructures for high-efficiency optoelectronic devices were prepared at different annealing temperatures using a sol-gel spin-coating method. Atomic force microscopy and X-ray diffraction were performed to measure the structural properties of the nanostructures and calculate their bulk modulus using our model. Thermogravimetric analysis, differential thermal analysis, differential scanning calorimetry, and Fourier transform infrared, UV-Vis, and photoluminescence spectroscopies were used to investigate the thermal and optical properties of the samples. The electrical characteristics of the CdS nanostructures were analyzed to determine their gain.

Keywords; Nanostructures, Electrical properties, Chalcogenide