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## Synthesis and characterization of chemical-bath deposition CdPb<sub>x</sub>S<sub>1-x</sub> nanofilms

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In this work is presented the synthesis and characterization of cadmium lead sulphur (CdS<sub>1-x</sub>Pb<sub>x</sub>) deposited by chemical bath deposition (CBD) technique at the reservoir temperature of 20±2°C varying the lead acetate volume added to the growth solution in the range of 0 to 30 ml. The films chemical stoichiometry was determined by Energy-dispersive X-ray spectroscopy (EDS). The CdS<sub>1-x</sub>Pb<sub>x</sub> shows zinc blende (ZB) crystalline phase, which was found by X-ray diffraction (XRD) analysis and it was confirmed by Raman spectroscopy. The average grain size of the CdS<sub>1-x</sub>Pb<sub>x</sub> films was ranged from 1.33 to 6.66 nm that was determined by Debye-Scherrer equation from ZB (111) direction and it was confirmed by high resolution transmission electron microscopy (HRTEM). Raman scattering shows that the lattice dynamics is characteristic of bimodal behaviour and the multi-peaks adjust of the first optical longitudinal mode for the CdPbS denotes, the Raman shift of the characteristic peak in the range of 305-298 cm<sup>-1</sup> of the Cd<sub>1-x</sub>Pb<sub>x</sub>S crystals is associated with the lead incorporation. By transmittance at room temperature was found three absorption regions, which depend of lead incorporated in the films. The main CdS<sub>1-x</sub>Pb<sub>x</sub> band gap energy can be varied from 2.49 to 2.46 eV by varying the lead acetate volume added in the growth solution measured at room temperature.

### Biography

J Díaz-Reyes obtained his PhD at the Center for Research and Advanced Studies of the National Polytechnic Institute, sited at Mexico City, and Post-doctoral studies from Polytechnic University of Madrid, Spain. He is a Researcher at the Center for Applied Research in Biotechnology of the National Polytechnic Institute, sited at Tepetitla, Tlaxcala, Mexico. He has published more than 65 papers in reputed journals.

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