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# Influence of substrate temperature on the physical properties of SnS<sub>2</sub> thin films prepared using nebulized spray pyrolysis technique(Article)

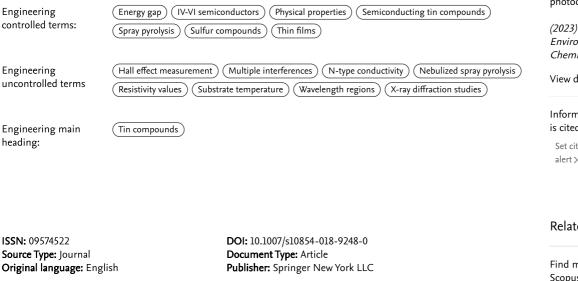
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Abstract

Influence of substrate temperature on the physical properties of Tin disulfide (SnS<sub>2</sub>) thin films is investigated. X-ray diffraction studies revealed that the SnS<sub>2</sub> thin films are preferentially oriented as (001) plane. SEM analysis showed that SnS<sub>2</sub> thin films had platelet-like grains. EDAX analysis clearly confirms the presence of expected elements of tin and sulfur in appropriate proportions. Multiple interference effects were predominant in all these thin films in wavelength region of 500–1100 nm. The direct optical band gap of tin disulfide thin films had decreased from 3.26 to 2.7 eV with the increase in substrate temperature. Photoluminescence studies expose that the intensity of NBE emission peaks differs according to the substrate temperature. A minimum resistivity value of  $2.19 \times 10^1 \Omega$  cm was obtained for the film grown at T<sub>s</sub> = 250 °C. Hall Effect measurement exhibited that all the SnS<sub>2</sub> samples had n-type conductivity. Raman spectra exposed that SnS<sub>2</sub> films had a broad peak at 314 cm<sup>-1</sup>. © 2018, Springer Science+Business Media, LLC, part of Springer Nature.

#### Indexed keywords



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