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Structural and transport studies on nanostructured SnS synthesized by solvothermal process PRATIMA AGARWAL, Department of Physics, IIT Guwahati, Guwahati 781039, India, GOURI S. PAUL, Center for Energy, IIT Guwahati, Gwahati 781039, India — Nanostructured SnS has a lot of interest due to its potential application in optoelectronic devices such as solar absorber, near-infrared detector and as a holographic recording medium. SnS usually exhibits p-type conduction and reported to have a direct band gap of about 1.32-1.5 eV and an indirect band gap of 1-1.3 eV dependent of the condition of preparation. In this work we report structural and transport studies on nanostructured SnS synthesized by solvothermal process for different reaction time (RT). Structural and morphological analyses are carried out by XRD, SEM and TEM. It is observed that structure of the as-prepared SnS powder samples vary with RT. SAED patterns reveal that as synthesized SnS are single crystals. Transport measurements done on thin films prepared by Doctor's blade techniques show that films are thermally stable and uniform through out the surface. The conductivity of the SnS thin films is measured in coplanar geometry in the temperature range (303–463) K. The films show thermally activated conduction and the curves are identical for both heating and cooling cycle.

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