

Abstract Submitted
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Solvothermal synthesis and thermoelectric property of nanostructured bismuth selenide KAMAL KADEL, LATHA KUMARI, WENZHI LI, Department of Physics, Florida International University, JIANU HUANG, PAULA P PROVENCIO, CINT, Sandia National Laboratories, ZHIFENG REN, Department of Physics, Boston College, FLORIDA INTERNATIONAL UNIVERSITY TEAM, SANDIA NATIONAL LABORATORIES COLLABORATION, BOSTON COLLEGE COLLABORATION — Bismuth selenide (Bi_2Se_3) nanostructures were synthesized via solvothermal method. The crystallinity of the as-prepared sample has been analyzed by X-ray diffraction, which shows the formation of rhombohedral Bi_2Se_3 . Electron microscopy examination shows that the Bi_2Se_3 nanostructures have hexagonal plate like structure. The effect of the synthesis temperatures on the structure and morphology of the nanostructures has also been investigated. It is found that the particle size increases with the synthesis temperature. Thermoelectric properties of Bi_2Se_3 nanostructures have also been measured. A maximum figure-of-merit (ZT) of 0.096 was obtained at 523K and a minimum thermal conductivity of $0.751\text{Wm}^{-1}\text{K}^{-1}$ at 300K.

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