

Abstract Submitted  
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**Room Temperature Thermoelectric Properties of Porous BiSbTe Thin Films** JANE CORNETT, ODED RABIN, University of Maryland —  $\text{Bi}_{(2-x)}\text{Sb}_x\text{Te}_3$  is currently the best known room temperature p-type thermoelectric material, with a ZT value  $\sim 0.75$ . We report synthesis of  $\text{Bi}_{(2-x)}\text{Sb}_x\text{Te}_3$  thin films via pulsed laser deposition using a  $\text{Bi}_{0.5}\text{Sb}_{1.5}\text{Te}_3$  target. We have investigated the effect of deposition parameters, including substrate, laser power and inert gas pressure, and annealing conditions on the microstructure, composition and thermoelectric properties of the films. We find a strong dependence of film characteristics on background pressure: The Sb content of the films increases with deposition pressure. Low pressure (1-2 mTorr) depositions yield highly conducting and amorphous films deficient in Te. In addition, we will present a comparison of the thermoelectric properties of porous and dense BiSbTe films, to evaluate film porosity as a means for increasing confinement and improving the thermoelectric power factor.

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