

Abstract Submitted  
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**High pressure X-ray diffraction studies on  $\text{Bi}_{2-x}\text{Sb}_x\text{Te}_3$  ( $x=0,1,2$ ) materials**<sup>1</sup> MATTHEW JACOBSEN, RAVHI KUMAR, ANDREW CORNELIUS, University of Nevada, Las Vegas — Recently  $\text{Bi}_2\text{Te}_3$  based thermoelectric materials have gained importance due to their high thermoelectric figure of merit in thin films [3]. Pressure tuning of the thermoelectric figure of merit has been reported for several materials [1],[2]. In order to investigate the bulk properties of  $\text{Bi}_2\text{Te}_3$ ,  $\text{Sb}_2\text{Te}_3$ , and their solid solution in detail, we have performed structural studies up to 20 GPa. Our diffraction results show that all three compounds transform from the ambient pressure structure to a high pressure phase between 5 and 7 GPa. Details of the results will be discussed in this presentation. [1]Chen, G., Dresselhaus, M.S., Dresselhaus, G., Fleurial, J.-P., and Caillat, T. *Recent developments in thermoelectric materials*. International Materials Reviews, **48**, 45-66 (2003). [2]Rowe, D.M. *CRC Handbook of Thermoelectric Materials*. CRC Press, 1995. [3]Venkatasubramanian, R., Silvola, E., Colpitts, T., and O'Quinn, B. *Thin-film thermoelectric devices with high room-temperature figures of merit*. Nature, **413**, 597-602, 2001.

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