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Thermoelectric Properties Studies on n-type $Bi_2Te_{3-x}Se_x$ JIAN YANG, XIAO YAN, YI MA, BED POUDEL, YUCHENG LAN, D.Z. WANG, Z.F. REN, Physics Department, Boston College, Chestnut Hill, MA02467, Q. HAO, G. CHEN, Department of Mechanical Engineering, Massachusetts Institute of Technology, Cambridge, Massachusetts 02139 — $Bi_2Te_{3-x}Se_x$ is a classic room temperature n-type thermoelectric material. In spite of the long history of research, its ZT is still below 1. By directly making nano sized particles using mechanical alloy from element, then pressing the nanoparticles into 100% dense bulk sample with nano-structures by hot press, we expect to decrease the thermal conductivity by the increased grain boundary scattering of phonons so to improve the ZT above 1. The ratio of Te/Se was varied systematically to investigate its effect on thermal conductivity.

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