Abstract Submitted
for the MAR12 Meeting of
The American Physical Society

Enhancement of Thermoelectric Figure-of-Merit by Resonant States of Aluminum Doping in Lead Selenide QINYONG ZHANG, Xihua University, HUI WANG, WEISHU LIU, HENGZHI WANG, BO YU, QIAN ZHANG, Boston College, ZHITING TIAN, GEORGE NI, SANGYEOP LEE, KEIVAN ESFARJANI, GANG CHEN, MIT, ZHIFENG REN, Boston College, XIHUA UNIVERSITY COLLABORATION, BOSTON COLLEGE TEAM, MIT TEAM — By adding aluminium (Al) into lead selenide (PbSe), we successfully prepared n-type PbSe thermoelectric materials with a figure-of-merit (ZT) of 1.3 at 850 K. Such high ZT is achieved by a combination of high Seebeck coefficient caused by very possibly the resonant states in the conduction band created by Al dopant and low thermal conductivity from nanosized phonon scattering centers.

Xiao Yan
Boston College

Date submitted: 22 Nov 2011 Electronic form version 1.4