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Enhanced thermoelectric figure of merit (ZT) of Te-doped $FeSb_2$ nanocomposite MANI POKHAREL, HUAIZHOU ZHAO, MACHHINDRA KOIRALA, ZHIFENG REN, CYRIL OPEIL, Department of Physics, Boston College, Chestnut Hill MA 02467 — FeSb2 is considered as a potential candidate for Peltier cooling applications because of its colossal value of Seebeck coefficient (45,000 μVK^{-1}) at around 10 K. Our earlier works [1,2] showed that the ZT values of undoped $FeSb_2$ nanocomposites could not be improved significantly despite of the drastic reduction in thermal conductivity which we attributed to the suppression of phonon-drag effect due to increased scattering of phonons off the grain-boundaries in nanocomposites. In this work, we demonstrate that combining nanostructuring approach with Te-doping further improves the thermoelectric properties to yield an enhanced ZT value in $FeSb_2$ nanocomposites.

[1] Huaizhou Zhao, Mani Pokharel, Gaohua Zhu, Shuo Chen, Kevin Lukas, Qing Jie, Cyril Opeil, Gang Chen, and Zhifeng Ren; *Appl. Phys. Lett.* 99, 163101 **(2011)**
[2] Mani Pokharel, Huaizhou Zhao, Kevin Lukas, Zhifeng Ren, and Cyril Opeil; *Mater. Res. Soc. Symp. Proc. Vol. 1, 2012 DOI:10.1557/opl.2012.150 456 5*

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