

## Effect of substitutions on the thermoelectric figure of merit of half-Heusler phases at 800 °C

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(Received 25 August 2005; accepted 30 November 2005; published online 24 January 2006)

The merit of thermally stable MNiSn (M=Ti, Zr, Hf) half-Heusler phases, as *n*-type thermoelectric materials, for high-temperature power generation has been examined. Sb doping at the Sn site is shown to increase both the figure of merit,  $ZT$ , and the temperature at which  $ZT$  is maximized. The benefits of increased alloying at the M and Ni sites, on the thermal conductivity and thermoelectric transport properties, have also been investigated. The thermoelectric figure of merit,  $ZT \sim 0.8$  at  $T \sim 800$  °C, for select Sb-doped MNiSn alloys was found to meet or exceed the industry benchmark set by SiGe alloys. © 2006 American Institute of Physics. [DOI: 10.1063/1.2168019]