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Optimally doped hybridization gap semiconductor $FeGa_3$ as potential thermoelectric alloy* VIJAYABARATHI PONNAMBALAM, DONALD T. MORELLI, Dept. of Chemical Engineering and Materials Science, Michigan State University — $FeGa_3$, a hybridization gap semiconductor with a band gap of ~ 0.5 eV can be a potential thermoelectric material if optimally doped. Due to the involvement of d-band in the transport, high Seebeck coefficient is a possibility. To achieve the optimum doping level, Mn, Co and Zn containing $FeGa_3$ alloys are being prepared either via the flux or solid state reaction method. Phase characterization will be carried out. Electrical and transport properties including resistivity, Seebeck and Hall coefficients and thermal conductivity will be measured over a wide temperature range of 80- 1000 K. These results will be presented and the potential of these compositions as thermoelectrics will be discussed.

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