

Abstract Submitted
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Characterization and thermoelectric properties of Si-Ge nanocomposite¹ DEZHI WANG, WENZHONG WANG, SHUO CHEN, JIANYU HUANG, ZHIFENG REN, Boston College, Dept. of Physics, HOHYUN LEE, GANG CHEN, MIT, Dept. of mechanical Engineering, MING TANG, M. S. DRESSELHAUS, MIT, Dept. of Electrical Engineering, PAWAN GOGNA, JEAN-PIERRE FLEURIAL, Jet Propulsion Laboratory, BRADLEY KLOTZ, Dynamic Science, Inc. — Low dimension is one of the most promising directions to search for high-ZT thermoelectric materials. It has been predicted by theory and proved by experiments that structures such as quantum well and superlattice can increase ZT by several times vs the corresponding bulk materials. However, it is very difficult to manufacture those low dimensional structures in large scale for bulk applications. To realize those principles, we have designed and synthesized successfully a new structure so called Si-Ge nanocomposite—nano Silicon particles in SiGe alloy matrix. The Si-Ge nanocomposite was made of nano silicon and germanium particles by a unique hot-press procedure. The samples are being characterized by TEM, SEM, XRD and thermoelectric property measurements. The results will be reported in detail.

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