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Thermoelectric Materials 2000
The Next Generation Materials for Small-Scale Refrigeration and Power Generation

Terry M. Tritt (Editor), G. Mahan (Editor), M. G. Kanatzidis (Editor), G. S. Nolas (Editor), D. Mandrus (Editor) (2001)

Editorial Review from Book News, Inc.:

The presentations from the symposium are grouped into the following topics: skutterudites, superlattice, new materials, quantum wires and dots, half-heusler alloys and quasicrystals, TE theory, thermionics, clathrates, and thin films TE. In addition, poster sessions include the following: semiconductors with tetrahedral anions as potential thermoelectric materials, lattice dynamics study of anisotropic heat conduction in supperlattices, structure and thermoelectric properties of new quaternary tin and lead Bismuth selenides, attributes of the Seebeck coefficient of Bismuth microwire array composites, and High-Z Lanthanum-Cerium Hexaborate thin films for low-temperature applications.Book News, Inc.®, Portland, OR

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Our recommended reading list:

- CRC Handbook of Thermoelectrics (1995)
- Principles of Thermoelectrics: Basics and New Materials Development (2001)
- Thermoelectric Materials 2000 - The Next Generation Materials for Small-Scale Refrigeration and Power Generation (2001)
- Semiconductors and Semimetals, Volume 69: Recent Trends in Thermoelectric Materials Research, Part One (2000)
- Semiconductors and Semimetals, Volume 70: Recent Trends in Thermoelectric Materials Research, Part Two (2000)
- Semiconductors and Semimetals, Volume 71: Recent Trends in Thermoelectric Materials Research: Part Three (2000)
- Thermoelectric Materials - New Directions & Approaches (1997)

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2.2 Thermoelectricity. Thermoelectric materials endow the free energy from waste heat for useful purposes. A typical thermoelectric material should have high electrical conductivity, low thermal conductivity and thus must maintain a temperature gradient. For an electrically conducting polymer nanocomposites, the electrical conductivity (Ïƒ) is expressed as Eq. They are also the best materials for use in thermoelectric generators when the temperature of the heat source is moderate. The dimensionless figure of merit, ZT, usually rises with temperature, as long as there is only one type of charge carrier. Eventually, though, minority carrier conduction becomes significant and ZT decreases above a certain temperature. There is also the possibility of chemical decomposition due to the vaporization of tellurium. Here we discuss the likely temperature dependence of the thermoelectric parameters and the means by which the composition may be optimized for ap