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ABSTRACT DEADLINE: JUNE 21, 2005

REMINDER: *In fairness to all potential authors, late abstracts will not be accepted.*

MRS Symposium F: Materials and Technologies for Direct Thermal-to-Electric Energy Conversion

The symposium will explore various state-of-the-art materials and technologies for direct thermal-to-electric energy conversion. It will focus primarily on, but will not be limited to, recent material and technological advances in the fields of thermoelectrics, thermophotovoltaics, thermionics, and thermoacoustics. The symposium intends to highlight material and device-design innovations that lead to higher efficiency thermal-to-electric energy conversion technologies. In addition, potential applications for these technologies will be discussed with emphasis on tying specific material properties, issues, and needs to the desired applications. Overviews of some current and potential application requirements will also be presented by industrial experts. The symposium will be designed to emphasize the multidisciplinary nature (materials science, physics, chemistry, and engineering) of the research needed to advance the state-of-the-art technology. Theoretical studies of transport properties, band structure and crystal chemistry of materials, thermodynamic analysis, and energy transfer in ballistic processes will also be included. Experimental efforts will include new capabilities in solid-state synthesis, new bulk materials, thin films, superlattices, and nanostructure materials. New developments in material property and device performance measurements will also be emphasized in this symposium.

Topics to be addressed include, but are not limited to, the following:

- Theoretical guidance to high-efficiency thermal-to-electrical energy conversion
- Synthetic strategies for preparing novel materials and compounds
- Low-dimensional systems
- Nanostructure materials
- Materials property measurement and its role in thermoelectric materials development
- New measurement techniques and approaches
- Design, performance testing, fabrication, and processing of energy conversion devices
- Device performance requirements for future applications

Invited speakers (partial list) include: **L. Chen** (Shanghai Inst. of Ceramics, P.R. China), **M.S. Dresselhaus** (Massachusetts Inst. of Technology), **T. Harman** (MIT Lincoln Labs), **M.G. Kanatzidis** (Michigan State Univ.), **James J. Krajewski** (Dupont Central R&D), **G. Mahan** (Pennsylvania State Univ.), **A. Shakouri** (Univ. of California-Santa Cruz), **F. Stabler** (General Motors), and **T.M. Tritt** (Clemson Univ.).

Partial graduate student support may be available. For information, contact Dr. Jihui Yang (preference at email address below).

Symposium Organizers

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