

2010
MRS



FALL
MEETING

Boston, MA • November 29–December 3

CALL FOR PAPERS

Abstract Deadline: June 22, 2010

REMINDER:

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

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MRS Symposium LL: Thermoelectric Materials for Solid-State Power Generation and Refrigeration

Increasing awareness and concern for energy resources and the environment have stimulated significant advances in materials and technology for energy conversion in recent years. This symposium features novel materials, materials processing, and device technologies for direct thermal-to-electric energy conversion, and solid-state refrigeration. The primary focus will be on recent material and technological advances in the fields of thermoelectrics, thermionics, thermophotovoltaics, and thermoacoustics. The symposium intends to highlight material and device-design innovations that lead to high-efficiency thermal-to-electric energy conversion. 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. Thermal, electrical, and mechanical properties of new materials and the processing of those materials into device structures will be emphasized. Theoretical studies of transport properties, band structure, and crystal chemistry of materials, thermodynamic analysis, and energy transfer in various 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 underlined.

Topics to be addressed include (but are not limited to):

- Theoretical guidance to high-efficiency thermo-to-electrical energy conversion
- New and emerging technologies for thermoelectric power conversion
- High-efficiency bulk thermoelectric materials
- Composite thermoelectrics
- Synthetic strategies for preparing novel materials and compounds
- Processing of bulk and thin-film nanostructured materials
- Materials property measurement and new measurement techniques
- Design, performance testing, fabrication, and processing of energy-conversion devices
- Device-performance requirements for future applications
- Novel applications of thermoelectric generators
- Synthetic strategies for preparing novel materials and compounds
- Role of spark plasma sintering techniques for TE materials
- Thermoelectrics related to harvesting solar energy
- Applications and new directions in thermal energy conversion

Invited speakers include (partial list):

Harald Böttner (Fraunhofer IPM, Germany), **Silke Bühler-Paschen** (Technical Univ. of Vienna, Austria), **Gang Chen** and **Millie Dresselhaus** (Massachusetts Inst. of Technology), **Mercouri Kanatzidis** (Northwestern Univ.), **Antoine Maignan** (CRISMAT, France), **Ali Shakouri** (Univ. of California, Santa Cruz), **Xinfeng Tang** (Wuhan Univ. of Science and Technology, China), **Ichiro Terasaki** (Waseda Univ., Japan), **Lilia Woods** (Univ. of South Florida), **Shinsuke Yamanaka** (Osaka Univ., Japan), **Jihui Yang** (General Motors R&D Ctr.), and **Tie-Jun Zhu** (Zhejiang Univ., China). Additional invited speakers may be selected from the contributed abstracts.

Partial graduate student support may be available. For information, contact Dr. Terry M. Tritt (preference: ttritt@clemson.edu).

Symposium Organizers

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