

**PACRIM8 2009 Meeting
May 31 thru June 5, 2009,
Vancouver, BC, Canada**

**Direct Thermal to Electrical Energy
Conversion Materials & Applications**

Scope and Focus:

Recently, there have been significant advances in direct thermal-to-electrical energy conversion materials and this has generated increased interest in the field. This symposium will highlight a combination of new theoretical ideas, new materials and new device concepts in the US, Canada, Asia and Europe. A spectrum of plenary, invited and contributed presentations will provide an overview of the status of research and development in thermoelectric materials, devices and applications. This symposium will focus on novel materials, various methods of materials processing and synthesis along with technologies and applications related to direct thermal-to-electric energy conversion, specifically: thermoelectrics (TE), thermionics and thermophotovoltaics. Processing plays a central role in the performance of many materials. The role of spark plasma sintering (SPS) has had an ever-increasing role in the development of thermoelectric materials processing methods. We plan to hold joint sessions with the SPS symposium in order to further explore the potential of this processing technique for thermoelectric materials. Thermal, electrical and mechanical properties of new materials and the processing of those materials into device structures will be emphasized. The symposium also intends to highlight material & device-design innovations that lead to higher efficiency thermal-to-electric energy conversion technologies. The development of high performance TE materials requires a multi-disciplinary approach (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 nanostructured materials. New developments in material property and device performance measurements will also be highlighted in this symposium.

<http://www.acers.org/pacrim2008/>

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

- * Oxides and Other Materials With Strong Electron Correlation
- * Theoretical Guidance to High Efficiency Thermoelectric Energy Conversion
- * New & Emerging Technologies for TE Power Conversion
- * High Efficiency Bulk TE Materials
- * Composite and Nano-Composite Thermoelectrics
- * Functionally Graded Materials
- * Thermoelectrics Related to Harvesting Solar Energy
- * Thermophotovoltaics and Other Related Topics
- * Low Dimensional Aspects of TE Materials
- * Synthetic Strategies for Preparing Novel Materials and Compounds
- * Role of Spark Plasma Sintering Techniques for TE Materials
- * 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
- * Applications and New Directions in Thermal Energy Conversion
- * Mechanical Properties of Various TE Materials

Partial list of tentative invited speakers: Others may be added and upgraded from contributed papers.

Thierry Caillat (JPL, USA)
George Nolas (Univ. of South Florida)
Susan M. Kauzlarich (UC Davis, USA)
Jihui Yang (GM R&D)
Dave Johnson (University of Oregon)
Don Morelli (Mich St. Univ.)
Holger Kleinke (University of Waterloo)
S. Yamanaka (Osaka University)
Fuqiang Huang, (Shanghai Institute of Ceramics, P. R. China)
Antoine Maignan (Directeur du Laboratoire CRISMAT, France)
Jiri Hejtmanek, (Institute of Physics of ASCR, Czech Republic)
Ichiro Terasaki, (Waseda University, Japan)
Qiang Li, (Brookhaven National Laboratory)
H. Ohta (Nagoya University, Japan)
Josh Zide (Univ. of Delaware)
Fivos Drymiotis (Clemson University, USA)
Dr. Frank Haaß (BASF-Germany)
Xinfeng Tang (Wuhan Institute of S&T)
T. J. Zhu (Zhejiang University, P. R. China)
Ryoji Asahi (Toyota Central R&D Labs, JAPAN)

List of Symposium Organizers

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