



Abstract Deadline: June 24, 2008
www.mrs.org/fall2008

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

CALL FOR PAPERS

MRS Symposium BB: Polymer-Based Smart Materials—Process, Properties, and Application

Smart materials, which can convert energy from form into another form among electric, mechanical, and thermal forms, have been an important type of material from fundamental physics to device applications. Polymer-based smart materials have been attractive in recent years due to the fact that the polymers are flexible and provide many advantages over inorganic smart materials, such as low cost and easy to process. Also, many newly developed polymer-based smart materials exhibit a better performance than inorganic materials, such as much higher strain response and higher energy density; and the recent developments in electronics challenge the polymer-based smart materials in many aspects, such as dielectric and electric properties in nano- and microscale.

The proposed symposium is designed to continue our effort to provide a platform for researchers from academics and industries to stimulate discussions and to present and discuss the recent research and commercial advances and needs. This symposium will focus on topics related to materials development, characterization, processing, manufacturing, analysis, design, and applications.

Topics will include (but not be limited to):

- Ferroelectric, piezoelectric, and pyroelectric polymers
- Electrostrictive and electrostatic polymers
- Ferroelectric liquid-crystal polymers
- All-organic (nano) composites and polymer blends
- Ionically activated electroactive polymers: polymer gels, IPMC, and conductive polymer
- Micro-, nano- and molecular-scale polymers for sensors and actuators
- Polymer-based smart materials for MEMS/NEMS applications
- Design and characterization of polymer-based smart materials for biological, thermal, pressure, and mechanical sensors
- Novel devices and designing for engineering applications, such as medical, artificial muscles, robotics, etc.
- Polymers for dielectrics and insulation
- Polymer-based materials for energy storage
- High-*k* and low-*k* polymers and polymer-based composites and their applications in electronics and ICs
- Electro-optical effect in polymeric materials
- Polymers for photonics and magnetics
- Nonlinear optic polymers
- Conductive and semiconductive polymers
- Dielectric behavior of polymers
- Electrical conduction, polarization, and breakdown in dielectric polymers
- Characterization of space charge and polarization
- Charging techniques
- Aging, degradation, and failure
- Space charge in polymers
- Electrets and their applications
- Other novel polymer smart materials and systems

Invited speakers include:

H. L. W. Chan (Hong Kong Polytechnic Univ., Hong Kong), **S. Ducharme** (Univ. of Nebraska-Lincoln), **F. Kremer** (Univ. Leipzig, Germany), **R. McMeeking** (Univ. of California-Santa Barbara), **C. W. Nan** (Tsinghua Univ., China), **P. Palffy-Muhoray** (Kent State Univ.), **C. L. Park** (Yonsei Univ., Korea), **Qibing Pei** (Univ. of California-Los Angeles), **G. Spinks** (Univ. of Wollongong, Australia), **T. Swager** (Massachusetts Inst. of Technology), **Y. Tajitsu** (Yamagata Univ., Japan), **J. H. Wendorff** (Philipps-Univ. Marburg, Germany), and **Zhuo Xu** (Xian Jiaotong Univ., China).

Symposium Organizers

Zhongyang Cheng

Auburn University, Dept. of Materials Engineering,
275 Wilmore Laboratory, Auburn, AL 36849-5341
Tel 334-844-4913, Fax 334-844-3400, chengzh@eng.auburn.edu

Qiming Zhang

The Pennsylvania State University, 187 Materials Research Lab,
University Park, PA 16802
Tel 814-863-8994, Fax 814-863-7846, qxz1@psu.edu

Siegfried Bauer

Johannes-Kepler University Linz, Dept. of Soft Matter Physics,
A-4040 Linz, Austria
Tel 43-732-9015-5628, Fax 43-732-2468-9242, sbauer@jku.at

Debra A. Wroblewski

Los Alamos National Laboratory, Materials Science and Technology
Division, Coating and Polymer Group, MST-7, MS E549, Los Alamos,
NM 87545
Tel 505-667-7250, Fax 505-667-8109, wroblewski@lanl.gov