



Symposium F: Nanostructured Functional Materials for Advanced Energy and Environmental Applications

Scope of the Symposium

While fossil fuels presently provide worldwide over 80% of its energy needs, concerns about long term availability, cost, and emissions has stimulated great interest in identifying a) improved combustion cycles with reduced emissions utilizing catalysts and sensors, b) electrochemical conversion via fuel cells, c) capture of waste heat by thermoelectric devices, d) capture of solar energy via photovoltaic cells, e) storage of electricity via high energy batteries, f) solar assisted splitting of water to generate hydrogen, g) energy conservation via the use of smart electrochromic windows, and h) use of solid state lighting. In all of these active scientific and technological areas, nanostructured functional materials appear to be playing an ever increasing role. For example, nearly all recent advances in the areas of thermoelectric devices, dye sensitized solar cells and lithium batteries have resulted from the optimization and control of materials on the nanoscale. In this symposium, contributions are invited which describe work directed towards the science and technology of functional materials designed for advanced energy and environmental applications.

Abstracts will be solicited in (but not limited to) the following areas:

- The processing and fabrication of nanostructured functional materials
- Their structural and microstructural characterization
- Their electrical, electrochemical, optical and magnetic characterization
- Modeling of nanostructured materials and devices
- Nanostructured catalysts designed for energy conversion and emissions control
- Nanostructured materials (e.g. cathodes and anodes) for advanced batteries, fuel cells and photoelectrochemical cells
- Nanostructured materials for thermoelectric applications
- Nanostructured materials for solar energy conversion and storage
- Nanostructured materials for advanced sensor applications
- Nanostructured materials for information storage

Tentative list of invited speakers

Ludwig Gauckler, ETH Zurich, Switzerland; **Joachim Maier**, Max Planck Institute, Stuttgart, Germany; **Avner Rothschild**, Technion, Israel; **Il-Doo Kim, Kaist**, Taejon, Korea; **Lionel Vassieres**, NIMS, Tsukuba, Japan; **Enrico Traversa**, NIMS, Tsukuba, Japan; **Michael Graetzel**, EPFL, Lausanne, Switzerland; **Gerbrand Ceder**, MIT, Cambridge, MA, USA; **Michael Strano**, MIT, Cambridge, MA, USA; **Anke Weidenkaff**, EMPA, Deubendorf, Switzerland; **Rose Noelle Vannier**, ENSCL, Lille, France; **Edson R. Leite**, DQ, UFSCar, Brazil; **Vincenzo Esposito**, Risø DTU, Roskilde, Denmark.

Organizers

Harry L. Tuller (Department of Materials Science and Engineering, Massachusetts Institute of Technology, Cambridge, USA)
Reginaldo Muccillo (Center of Science and Technology of Materials, Energy and Nuclear Research Institute S. Paulo, Brazil).