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# CALL FOR PAPERS

**ABSTRACT DEADLINE: JUNE 21, 2005**

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

## MRS Symposium C: Material Innovations for High-Performance Building Systems

The performance of building systems, such as the exterior envelope, structure, building services, and others, can be improved through the application of materials that better address evolving contemporary need at reasonable life-cycle costs. New glass coatings, laminations and processes, composites and pultrusions, ultrahigh performance concrete, novel metallic alloys and ultralight-weight metals and other materials will be highlighted in terms of their impact on the design and performance of contemporary buildings. This symposium intends to focus on the latest advances in building systems promoted by the innovative application of new and existing materials. Contributions that are primarily based on the design of building assemblies without significant material development, and typical devices used as part of these constructions, will not be considered. The application of new materials not normally used in buildings and the development of novel materials for better system performance, e.g., composites, coatings, high-performance glasses, polymers as metal substitutes, and reconfigurable materials, are among the materials of interest to this symposium. Materials that are dynamic in their optical, thermal, or structural response to changing external or internal conditions are of particular interest, as are related sensing and control elements. Novel materials should not only meet stringent performance and durability requirements but should have positive environmental impacts as indicated by life-cycle assessment.

The proposed topics include, but will not be limited to:

- New fiber-reinforced composites for use as structural building and infrastructure elements
- New metals for cladding systems
- New uses of aluminum as the superstructure of premanufactured and site-built buildings
- New concrete formulations including self-compacting, ultrahigh-strength and toughness, and ductile concrete
- New biocomposites for buildings
- New polymers applied to exterior wall systems
- Development of glass and polymers
- Development of glass and polymers for high-performance windows
- Development of coatings and substrates for dynamic light control
- Development of polymer films and textiles for air/moisture barrier materials
- Development of foam materials (metal and ceramics) for building applications
- Improved and novel methods for materials selection by the building engineer and architect
- Improved methods of characterizing performance of dynamic materials
- Development of controllable thermal storage materials
- Development of variable conductivity and ultralow conductivity materials
  - Integrated sensor and actuators for dynamic control
  - Variable emittance and reflectance surfaces, or novel solar collection and rejection surfaces
  - Self-cleaning and antibacterial coatings for building surfaces
  - New generation of adhesives and sealants
  - Novel energy conversion surfaces

A joint session is anticipated with Symposium D: *Organic and Nanostructured Composite Photovoltaics and Solid-State Lighting*.

**Invited speakers** include: **Michelle Addington** (Harvard Univ.), **Mike Ashby** (Univ. of Cambridge, United Kingdom), **Klaus Daniels** (ETH, Switzerland), **Nabil Grace** (Lawrence Technological Inst.), **Thomas Keller** (EPF, Switzerland), **Daniel Schodek Kumagai** (Harvard Univ.), **Wayne Maddever** (CYMAT Corp.), **Hamid Saadatmanesh** (Univ. of Arizona), **Freider Seible** (Univ. of California-San Diego), **Tim Siahatgan** (Modular Housing Systems), **Mark West** (Univ. of Manitoba, Canada), and **Bill Zahner** (Architectural Metal Consultants).

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