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**ABSTRACT DEADLINE: NOVEMBER 1, 2005**

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

## MRS Symposium I: Silicon-Based Microphotonics

The ever-increasing need for faster information processing has driven the rapid development of photon-based communication and computing technologies. However, the ultimate success of photonics relies on the integration of active and passive functions into one compact form. The mature CMOS infrastructure enables the realization of inexpensive, monolithically integrated optoelectronic components on a chip, and a number of new high-performance components have recently been demonstrated. Future device generations will rely on the development and integration of new silicon-compatible materials and structures that enable generation, manipulation, and detection of optical signals at short length scales.

In many cases, the final performance will be fabrication process dependent; and controlling microstructure and material interactions in the device synthesis will be critical. The development of new methods for microprobing, testing, and characterization will, therefore, be of great importance.

It is the objective of this symposium to bring together materials scientists and optical engineers to share the recent progress, identify critical problems, provide promising solutions, and assess possible roadmaps.

The goal of this symposium is to: (1) present and review the latest advances in concepts and methodologies in the field of silicon-based photonics; (2) evaluate and compare emerging concepts and methodologies; (3) identify and overcome scientific, technological, and commercial barriers; and (4) determine the approaches for the largest industrial impact.

Contributions are sought in all areas of silicon-based photonics, including, but not limited to:

- Silicon-based optoelectronic materials growth and characterization
- Silicon-based nanostructures including Si nanocrystals, nanowires, multilayers, alloys, and SiGe structures
- Rare-earth doping in silicon, silica, and other CMOS-compatible optoelectronic materials
- Fabrication of low-loss and small-bend radius waveguides
- Silicon-based light-emitting diodes
- Silicon-based lasers (nanocrystal, Raman, and rare-earth)
- Silicon-compatible modulators
- Chip-to-chip and intrachip optical interconnects (silicon-based)
- Active and passive plasmonic devices
- CMOS-compatible detectors
- Reliability and packaging of silicon-based microphotonic devices (isolators and mode converters)
- Silicon-based photonic devices for sensing
- Process integration issues for electronic and photonic device processing
- Photonic and electronic system architecture issues that are relevant to materials and component design

**Invited speakers** include: **Harry Atwater** (California Inst. of Technology), **Philippe Fauchet** (Univ. of Rochester), **Ulrich Goesele** (Max-Planck-Inst., Halle, Germany), **Jim Harris** (Stanford Univ.), **Bahram Jalali** (Univ. of California-Los Angeles), **Oskar Painter** (California Inst. of Technology), **Albert Polman** (FOM-Institute, The Netherlands), **Gun Yong Sung** (Electronics & Telecommunications Research Inst., R.O. Korea), **Leonid Tsybeskov** (New Jersey Inst. of Technology), and **Yuri A. Vlasov** (IBM T.J. Watson Research Ctr.).

## Symposium Organizers

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