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CALL FOR PAPERS

ABSTRACT DEADLINE: NOVEMBER 1, 2005

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

MRS Forum KK: Education in Nanoscience and Engineering

The recent emergence of nanoscience/engineering/technology as a major activity results from the well-known size dependence of the properties of materials and devices. Examples are the catalytic behavior of nanoparticles, the variation of emission and absorption frequencies of semiconductor nanoparticles, the stability of nanometer scale thin films, and biologically inspired nanocomputing. The host of new microscopies, spectroscopies, and synthesis methods being developed to make and characterize these materials, and devices and to measure their properties, are rather abstract. It is also worth noting that the capital cost and site sensitivity of much of the equipment used for these measurements often limits its distribution to large research centers, despite the need for it in many disperse educational programs.

New educational methods and techniques are being explored at all levels of the university system in the U.S., and in all industrial nations, to teach the abstract topics that comprise the field. Societal effects accompanying the widespread deployment of nanotechnology are an important educational concern. In the U.S., there are now more than 80 Nanotechnology for Undergraduate Education (NUE) programs established, mostly at four-year undergraduate colleges. Several large interdisciplinary programs for research on nanoscience/engineering/technology (NSET) with educational components have been established at research universities and national laboratories. These include the National Nanotechnology Infrastructure Network (NNIN), Nanoscale Science and Engineering Centers (NSEC), and Materials Research Science and Engineering Centers (MRSEC) among others.

During this forum, we want to explore, through invited and contributed papers and posters, all aspects of the current state of nanoscience/engineering/technology education at the university undergraduate and graduate levels, and new initiatives for teaching mathematics and computer skills to undergraduate and K-12 students.

Papers are solicited on, but not limited to, the following general topics:

- How societal effects accompanying deployment of nanotechnology should be defined and taught
- Current teaching methodologies for NSET at colleges in U.S. and overseas
- Current teaching methods for NSET at large research institutions in the U.S. and overseas
- Supportive interactions for NSET teaching between four-year colleges, large research universities, and national laboratories
- Employer expectations for NSET education at the community college, baccalaureate, and graduate-degree levels
- Innovative new mathematics teaching methodologies for K-12 and undergraduate NSET student preparation
- Methods to assess NSET teaching effectiveness

Invited speakers include: **Harry Kroto**, *Nobel Laureate* (Florida State Univ.), **Hiroshi Amano** (Meijo Univ., Japan), **Marie-Isabelle Baraton** (Univ. Limoges, France), **Marilyn Carlson** (Arizona State Univ.), **Kamania Chattopadhyay** (Indian Inst. of Science, India), **Stephen J. Fonash** (Pennsylvania State Univ.), **N.I. Jaksic** (Colorado State Univ.-Pueblo), **J. Liu** (Monsanto Co., St. Louis), **Clark Miller** (Univ. of Wisconsin-Madison), **Delana A. Nivens** (Armstrong Atlantic State Univ.-Georgia), **Michael Oehrtman** (Arizona State Univ.), **Julia Phillips** (Sandia National Labs), **Dan Sarewitz** (Arizona State Univ.), **Aldrin Sweeney** (Univ. of Central Florida), **George Thompson** (Intel Corp., Santa Clara), and **Jing Zhu** (Tsinghua Univ., China).

Forum Organizers

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