Nanomaterials Workshop for Oklahoma High-School Science Teachers

When:
July 18 - 26, 2005

Where:
The workshop is on the campus of The University of Tulsa. The actual workshop will be held in Keplinger Hall, where the Electron Microscope (a primary investigative tool to be used in this workshop) is housed.

Purpose:
The purpose of this workshop is to introduce science teachers to the new and developing area of Nanomaterials. The goal is to integrate fundamental concepts of physics and chemistry (this is the starting point of Materials Science) and hands-on laboratory work. This workshop will help science teachers who, along with their students, will develop student projects. Science is best learned when it is actually practiced in a real-life setting. Scientists at TU will act as facilitators/advisors for these projects.

Format:
Each day we will review some key concepts in Physics and Chemistry. We will also review laboratory techniques that are widely used in Materials Science. Some of the topics we will cover are electron microscopy, atomic force microscopy, x-ray diffraction, and materials growth (electro-deposition, evaporation, and so on).

Participants will work together to write up laboratory reports at the end of the day. At the end of the workshop we will collect, copy, and distribute the proceedings to each participant.

Stipend and Housing:
All participants receive an $875 stipend; housing in the University Inn is provided for out-of-town participants.

Academic Credit (tentative):
We are in the process of arranging graduate credit for interested participants. Participants may elect to enroll in the workshop for three hours of graduate credit as Special Students in the Graduate School of the University of Tulsa. A graduate scholarship will cover tuition and application fees.

Workshop Instructors:
Dr. Saibal Mitra is the Principle Investigator for this workshop; Dr. Mitra is an Associate Professor of Physics and Engineering Physics and a faculty member in
the Physics and Engineering Physics Department at the University of Tulsa. He is an accomplished teacher and has taught for eight years at TU. He was also the Co-Principle Investigator for a 2000-2002, Eisenhower workshop called Physics Teacher’s Workshop: Demonstrations and Lab Exercises. Dr. Mitra grows and characterizes Nanomaterials in his laboratory.

Dr. Winton Cornell of the Department of Geosciences is the Co-Principle Investigator for this workshop. He has taught at TU for fifteen years, and supervises the University's Microanalysis Laboratory, which houses an electron microprobe, an electron microscope, and an x-ray diffraction system, among others. His research is mainly in the area of analytical geochemistry.

**Application Procedure:**

Please fill out and return the accompanying application form. We especially encourage teachers with significant populations of historically under-represented and under-served groups to apply (e.g., minorities, females, gifted, etc.). **Applicants will be selected June 24\(^{th}\), 2005** and notified immediately. Late applications will be considered if positions are available.

**Housing:**

For participants unable to commute, a limited amount of housing is available in the university Inn on the campus of the University of Tulsa. There will be no cost for this housing for eligible participants. Participants will be responsible for their own meals and transportation. See the application form to apply for housing.

**Follow-up:**

During the workshop, each participant will create a plan to incorporate the results of this workshop in their regular teaching activities. After the workshop, by sometime in late fall (approximately, November 4), participant teachers need to deliver (to us) curricular materials of their design. These materials will be posted to the website.

**Participants:**

This workshop is designed for public and private high-school science teachers.

**Questions:**

Any questions about this workshop should be directed to Dr. Winton Cornell (918) 631-3248, e-mail winton-cornell@utulsa.edu. Only in Dr. Cornell’s absence should you contact Dr. Saibal Mitra (918) 631-3030, e-mail saibal-mitra@utulsa.edu; Dr. Mitra is presently on sabbatical. For more information, visit: www.ens.utulsa.edu/nanomaterialsworkshop