



Microscopy Camp 2008 Nanoscience & Nanotechnology

Questions: Can we see atoms? What is the current model of atomic structure? What equipment is used to image objects at atomic resolution? How small is nano? Is nanotechnology important for me and my students? How are nanoparticles detected and characterized? What are the ethical and medical advantages and concerns of using nanoparticles? How can we teach students about the particulate nature of matter?

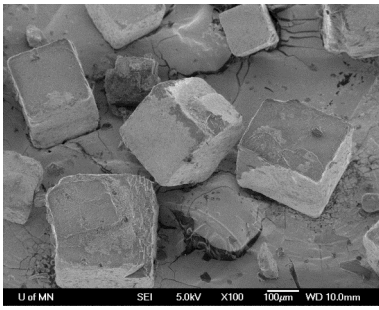
Wanted: Fourteen enthusiastic Secondary Science Teachers with an interest in learning and applying state-of-the-art microscopy (HRTEM, AFM & SEM) to observe nanoparticles and various chemical and biological particles. Teachers will learn about atomic structure imaging and curriculum implementation for their classrooms as well as explore and work in a research laboratory. The program is designed by a teacher- so you know we'll have fun too! All fourteen participants last year replied "YES!" they would recommend this class to a colleague!

Where: Department of Chemistry; Department of Curriculum & Instruction; University of Minnesota **249A Smith Hall**

When: July 14th -July 18th, 2008 9:00am-4:00pm

Who: Leslie Flynn and Lee Penn, University of Minnesota

Why: To make and look at particles teachers synthesize, use light and electron microscopes, and engage in laboratory investigations and demonstrations appropriate for middle and high school classrooms about the particulate nature of matter, nanoscience and nanotechnology. Teachers will work in a chemistry lab with faculty and explore current scientific conceptions, technology, and best pedagogical practices for implementation into the classroom. Teachers will use an electron microscope that can magnify objects to greater than **TEN MILLION TIMES!**



Take cool images with explanations of the science back to your students! Some Details:

- **Free:** no cost to teachers from urban Minneapolis & St. Paul School District
- Graduate Credit: **3 FREE semester credits**
- **Free** lunch and snacks each day; including a special "Lunch w/Scientists" from around the University to meet and make contacts for future work or questions.
- **Free** course materials
- **\$100 cash** to spend as you want!
- **Helps** teachers increase students achievement in these Minnesota Science Standards: Physical Science, Structure of Matter, History & Nature of Science, Scientific World View, Scientific Inquiry, Scientific Enterprise, Historic Perspectives, Nanotechnology.
- **Engages** secondary science teachers in a full range of concepts across grade levels allowing productive curricular interactions with varied grade level teachers.
- **Website** created by teachers to share findings and curriculum with colleagues and science classes! <http://www.chem.umn.edu/microscopycamp/>
- **FUN!**

Need more information? Contact Leslie Flynn leslie@umn.edu (612) 625-3267

Registration priority given to teachers from high needs schools. After June 1st, 2008 enrollment is open to other schools on first come basis.

Funds for this project were provided by a grant from the federal Teacher Quality Program of the No Child Left Behind Act administered by the Minnesota Office of Higher Education. This project was financed by \$ 44,223 in federal funds and \$8,190 from nonfederal sources.





Microscopy Camp

Nanoscience & Nanotechnology

at

University of Minnesota

2007 Registration Form

(To hold one of the 14 spots for you)

Participants will be chosen on a first come basis from high needs schools. If spots are still open after June 1st, 2008 teachers from other districts will be invited to participate.

Name:
School:
District:
School Address:
School Phone:
Email:
Best way to contact you after June 10th, 2008:
Courses Taught/Grade level/ Course Enrollment (approx.) (2007-2008):
Licensure Area(s):
Years Teaching Experience(end of 07-08 school year):

Send this registration form to:

leslie@umn.edu