

## **National Nanotechnology Infrastructure Network Vol.3 # 4**

### **A Periodic Newsletter of NNIN News and Announcements**

July, 2007

---

## **NNIN**

The National Nanotechnology Infrastructure Network consists of 13 nanotechnology user facilities at 13 major academic institutions. Funded by the National Science Foundation, our facilities are available to the national user community on an open basis. We provide accessible resources across the entire breadth of nanotechnology. To this end, each site has specialized areas of expertise within the network, ranging from biology and chemistry to materials characterization and traditional microfabrication. Complete information on NNIN sites, resources and access is available via the web site at [nnin.org](http://nnin.org).

## **New Equipment Highlights**

### **New Spectroscopic Ellipsometer at the University of Minnesota**

The Penn State Nanofabrication Facility is installing a Tencor Surfscan 4500 Surface Particle Inspection Analyzer. This laser-based system scans the entire substrate surface producing color coded graphic displays and hardcopy printouts of particles locations. Sub-micron particles, down to 0.2 $\mu$ m are readily detected. The system has a measurement time of 30 seconds on 6" wafers, particles sensitivity is 0.2 $\mu$ m diameter latex spheres, haze sensitivity is 0.4ppm, spatial resolution is 50 $\mu$ m spacing minimum, measurement range: 0.004 $\mu$ m and 102 $\mu$ m in twelve ranges and 256 gradations. The Tencor Surfscan 4500 Surface Particle Inspection Analyzer will be available for use in late August 2007.

The Leica Microsystems EM TP tissue processor recently acquired in the Nils Hasselmo Hall/Characterization Facility Electron Microscopy Laboratory can process tissues into resin for subsequent EM and LM analysis. Processing schedules are programmed into the instrument, and vials, containing baskets loaded with the tissue samples, are transferred through dehydration and infiltration solutions on a rotating carousel. For better control of processing at specific temperatures, the heater/cooler operates between +4°C and +60°C.

## Workshops and Conferences

Nanotechnology and Microfabrication for Small Businesses at the Michigan Nanofabrication Facility at the University of Michigan. New Schedule! October 24/25, 2007. This 2-day workshop will provide an introduction to MEMS, micro and nanofabrication technologies for industrial engineers and researchers. No previous microfabrication experience is required. For more information and online registration, please visit <http://www.mnf.umich.edu/Events.aspx?id=86>

### **NAMBE Conference and Workshop**

Nanotechnology Workshop at Georgia Tech

For the third year, Georgia Tech held a nanotechnology workshop designed to expose researchers to the tools and science available to undertake research in nanotechnology. The 2-day course focused on providing hands-on experience with cleanroom equipment coupled with lectures on the science behind that equipment. The workshop, held on July 24-25, was attended by 10 people from universities around the Southeast. Information: <http://grover.mirc.gatech.edu/workshops.php>

Penn State University is holding a short course entitled "High Resolution X-ray Scattering Methods for Thin Film Materials Analysis" on Friday, August 17, 2007 from 9:00 a.m. to 4:30 p.m. at The Penn Stater Conference Center Hotel in State College, PA. For more information or to register for the course please go to the following link: <http://www.mri.psu.edu/facilities/MCL/events/thinfilmsshortcourse.asp>.

Remember our Workshop on Sept 11/12 on nano-imprint processes (see [nnin.org](http://nnin.org) web page).  
Marylene

### 2.) NAMBE Conference and Workshop

Workshop on Nanoscale Epitaxial Semiconductor Structures (in conjunction with North America Molecular Beam Epitaxy Conference) will start at noon, Sept. 26th to noon, Sept. 27th, 2007, Albuquerque, NM.

Nanoscale epitaxial semiconductor structures with two or three of their dimensions at the nanometer scale promise revolutionary new device concepts and significant performance improvements for current devices. This workshop will spotlight the latest results of this disruptive technology and will focus on the epitaxial growth, characterization and device results of nanoscale epitaxial structures.

This workshop is co-sponsored by the NSF National Nanotechnology Infrastructure Network (NNIN) and the DOE Center for Integrated Nanotechnologies (CINT)

<http://nsg.chtm.unm.edu/>

## Education and Outreach

### **NNIN sites offering Summer Camps in Nanotechnology During June & July**

As part of the education and outreach component of the NNIN program, Stanford has been leading the development of “Remote Access” capabilities for education. This has been done in conjunction with the Nanoleap program (<http://www.mcrel.org/NanoLeap>) funded by NSF, which is a collaboration with Mid-Continent Research for Education and Learning (McREL) located in Denver. The Nanoleap team is developing two 3-week curriculum modules that bring nanoscience into high school science classes.

As part of this program the NNIN has been developing and testing two remote access activities, one for the “Physical Science” module and one for the “Chemistry” module. The NNIN sites involved in this initial round are: SNF at Stanford, the Characterization Facility at the University of Minnesota, and the Microelectronics Research Center at Georgia Tech. A short video about these remote-access-for-education activities has been produced that outlines the high school class activities completed over the past several months, involving 3 high schools and 3 NNIN sites, and includes actual footage of these activities as viewed in the classroom as well as over the internet.

A WMV version of the video can also be viewed on the internet by going to <http://snf.stanford.edu/Education/Nanoleap.RA.html> and clicking on the "Nanoleap Remote-Access Video" link at the bottom.

The NNIN Research Experience for Undergraduates program completed another highly successful summer program. Seventy undergraduates from across the country spent 10 weeks performing research at twelve of the NNIN sites. The program culminated with the annual REU Convocation which was held August 8-11, 2007 at the University of California Santa Barbara.

At the convocation, interns presented results of their research in oral and poster presentations. In addition, Intel's Higher Education Program presented a session on "Why Get your Ph.D. – Real Life Experiences." The presentations were webcast live and will be available at the NNIN website for viewing.

---

NNIN is a network of open user facilities. All resources at member facilities are available equally to users from Academia, industry, and government. Contact information and facility details are available via the NNIN web site at <http://www.nnin.org>.