

**Symposium on Undergraduate Nano-Education:  
"Addressing the Challenges of Nanoscale Science & Engineering Education"**

**NCLT-CNSE**

**SUNY-Albany, New York**

**August 5-8, 2009**

<b>Wednesday P.M., August 5</b>	
5:30	Bus leaves hotel for campus
6:00-6:50	Registration and buffet dinner in the <b>NFS Rotunda; building 255</b>
<b>Session No. 1: "Big Ideas in Nano-Ed: What Should Our Students Master?"</b>	
6:50-7:00	<a href="#">Richard Matyi</a> , CNSE, "Welcome and Overview" and Tom Mason, NU, "Our Grand Challenge"
7:00-7:40	<a href="#">Brian Augustine</a> , <i>James Madison University</i> , "Non-Negotiables in Undergraduate Nanoscale Science and Engineering Education: A Chemist's Perspective"
7:40-8:20	<a href="#">Lincoln Lauhon</a> , <i>Northwestern University</i> , "Not Just What, but How Students Know: a Teacher-Researcher Perspective"
8:20-9:00	Breakout Groups in <b>NFS 106, NFS 201, NFS Rotunda and NFS Auditorium</b>
9:00	Bus to Hotel

<b>Thursday A.M., August 6</b>	
7:30-8:30	Continental breakfast at the hotel
8:30	Bus leaves hotel for campus; Guests enter <b>building 255 (South Rotunda)</b>
<b>Session No. 2: "The Grand Challenges of Nano-Education: Why Nano-Ed Matters?"</b> (Open to the general public)	
9:00-9:15	Welcome and Introductions
9:15-10:00	<a href="#">Robert Chang</a> , Director, <i>NCLT</i> , "Preparing Future Generations to Address Global Challenges Through Nanotechnology"

10:00-11:00	<u>Tom Sonderman</u> , <i>GlobalFoundries</i> , "The Global Playing Field: Preparing Students to Compete in a Knowledge-Driven Industry"
11:00-11:20	Coffee break for Symposium Participants Only in the <b>NFS Rotunda</b>
11:20-12:30	Tour of Facilities
12:30-1:30	Lunch in the NFS Rotunda; <b>building 253</b>
<b>Thursday P.M., August 6</b>	
<b>Session No. 3: "What (and How) Do We Know About How Students Learn Nanoscience/Nanotechnology?"</b>	
1:30-2:10	<u>Greg Light</u> , <i>Northwestern University</i> , "Understanding Student Understanding at the Nanoscale: Contrasting Conceptions of Size & Scale"
2:10-2:50	<u>Denise Drane</u> , <i>Northwestern University</i> , "Undergraduate Students' Understanding of Surface Area-to-Volume Ratio"
2:50-3:10	Coffee break in the <b>NFS Rotunda</b>
3:10-3:50	<u>Robert Cormia</u> , <i>Foothills Community College</i> , "PNPA - a Transformative Approach for Learning and Practicing Nanoengineering"
3:50- 5:00	Breakout Groups in <b>NFS 106, NFS 201, NFS Rotunda and NFS Auditorium</b>
5:00-7:30	Poster session, buffet dinner in the <b>NFS Rotunda; building 253</b> Guest speaker: The Honorable Paul Tonko, 21st District of New York, United States House of Representatives
7:30	Bus leaves campus for hotel

<b>Friday A.M., August 7</b>	
7:00-8:00	Continental breakfast at the hotel
8:00	Bus leaves hotel for campus; guests enter <b>building 255 (NFS Rotunda)</b>
<b>Session No. 4: "How Can We as Teachers Facilitate Learning? Course Innovations"</b>	
8:30-9:10	<u>Lisa Klein</u> , <i>Rutgers University</i> , "How to Keep <i>Introduction to Nanomaterials Science and Engineering</i> Current?"
9:10-9:50	<u>Ana-Rita Mayol</u> , <i>University of Puerto Rico</i> , "Bringing Research into the Classroom:"

	Integrating Nanoscience Concepts, Techniques, and Skills in the Undergraduate Curriculum"
9:50-10:10	Coffee break in the <b>NFS Rotunda</b>
10:10-10:50	<u>Deb Newberry</u> , <i>Dakota County Technical College</i> , "Use of Real World Nanotechnology Applications: Teaching Nanoscale Concepts and Integrating Information from Traditional Science into a Unified Teaching Model"
10:50-11:30	<u>John Jaszczak</u> , <i>Michigan Technological University</i> , "Nanotech Innovations Enterprise at Michigan Technological University"
11:30-12:30	Breakout Groups in <b>NFS 106, NFS 201, NFS Rotunda and NFS Auditorium</b>
12:30-1:30	Lunch in the <b>NFN Rotunda; building 253</b>
<b>Friday P.M., August 7</b>	
<b>Session No. 5: "How Can We Facilitate Learning? Hands-on Innovations"</b>	
1:30-2:10	<u>Teri Odom</u> , <i>Northwestern University</i> , "Designing Research-Based Courses for Undergraduates and Hands-on Activities for the Developing World"
2:10-2:50	<u>Kurt Winkelmann</u> , <i>Florida Institute of Technology</i> , "Application-Centered Nanotechnology Experiments for First-Year Students"
2:50-3:20	Coffee break in the <b>NFS Rotunda</b>
3:20-4:00	<u>Samir Iqbal</u> , <i>UT-Arlington</i> , "Research Integrated Education in Bio-Nanotechnology"
4:00- 4:40	<u>Ethan Allen</u> , <i>University of Washington</i> , "Innovative Approaches to Challenges in Undergraduate Nanoscience Education"
4:40-5:30	Breakout Groups in <b>NFS 106, NFS 201, NFS Rotunda and NFS Auditorium</b>
5:30	Bus to the hotel
6:30	Bus returns to campus/open bar
7:00	Banquet: <b>NFN Rotunda; building 253</b> Guest speaker: Henry Hudson (!)
8:30	Bus to hotel

<b>Saturday A.M., August 8</b>	
7:30-8:30	Continental breakfast at the hotel; Session 6 in the hotel conference room
<b>Session No. 6: "New Approaches in Nano-Ed Degree Programs"</b>	
8:30-9:10	<u>Jennifer Cleary</u> , <i>Rutgers University</i> , "Trends in the Development of Nanotechnology Degree Programs in the United States"
9:10-9:50	<u>Robert Ehrmann</u> , <i>Pennsylvania State University</i> , "The Pennsylvania "Hands-On" Approach to Nanotechnology Education – Resources Available at NACK (The NSF National ATE Center for Nanotechnology Applications and Career Knowledge)"
9:50-10:10	Coffee Break
10:10-10:50	<u>Richard Matyi</u> , <i>SUNY-Albany</i> , "The Development of a Comprehensive Undergraduate Degree Program in Nanoscale Science"
10:50-11:30	<u>Brad Thiel</u> , <i>SUNY-Albany</i> , "A Modular Curriculum for Graduate Education in Nanotechnology"
11:30-12:00	Breakout Groups
12:00	Closing Remarks

### **Posters and Interactive Simulations:**

Richard Braatz, University of Illinois at Urbana-Champaign, "Interactive Simulations for Teaching 'Nano' Concepts: Nanoparticles, Nanowires, and Nanoporous Materials"

Nathaniel Cady, SUNY-Albany, "Nanobiology – A Basic Science in a Nano World"

Eric Eisenbraun, SUNY-Albany, "Developing an Interactive Digital Learning Environment for New Undergraduate Nanoscience and Nanoengineering Degree Paradigms",

Manuel Gomez, University of Puerto Rico, "Integrating Nanoscience Concepts and Skills in Upper Undergraduate Laboratories"

Heather Herd, University of Utah, "Interdisciplinary Research and Education: A University's Quest to Unite for the Future of Nanotechnology"

Vincent P. LaBella, SUNY-Albany, "Clickers in the Classroom for Nanotechnology Education"

Weijie Lu, Fisk University, "Integration of Scale into Physical Chemistry and College Chemistry"

Thomas Mason and Negar Mansourian-Hadavi, Northwestern University, "Rational Design of an Undergraduate Certificate Program in Nanoscience/Nanotechnology"

Vladimir Mitin and Nizami Vagidov, SUNY-Buffalo, "Quantum Mechanics for Nanostructures: First Course in Nanoelectronics for Engineers"

Ashok Mody, Kansas State University, "Basic Physics Behind the Size Dependent Properties of Nanoparticles"

Grant Norton, Washington State University, "Incorporating Nanomaterials into a New Ceramics Textbook"

Richard Prestopnik, Fulton-Montgomery Community College and Robert C. Decker, Mohawk Valley Community College in Utica "The Nanoscale Manufacturing Curriculum for Advanced Technological Education (NaMCATE), and NSF funded project"

Yubing Xie, SUNY-Albany, "Self-Assembly and Cell Encapsulation: A 'Top-Down' Challenge-Driven Learning-through-Research Module for Undergraduate and High School Students"

## **Picture Gallery**