



Title: Converging Technologies Session VI: MEMS and Nanotechnology

Date/Time: Thursday, July 31, 10:00 AM – 12:00 PM

Location: Renaissance Austin Hotel

Description: The fields of MEMS and nanotechnology are changing rapidly. The presentations in this session give unique perspectives on the challenges and opportunities that face educators and trainers in MEMS and nanotechnology today.

Dream Big, Think Small: The Wonderful World of MEMS & Nanotechnology

Presenter: Marlene Bourne, the Bourne Report

Edible restaurant menus. Night vision. Implantable sensors. Paper batteries. These are just a few examples of where MEMS and nanotechnology are already at work in real products. And the possibilities are endless - from smart stickers and camera pills, to artificial eyes, muscles and skin. Learn what these technologies are, how they're being used today, and where we might find them tomorrow - then let your imagination soar!

Nanotechnology Education Curriculum Development Program

Presenters: Doug Buckley, Springfield Technical Community College

Yitzi Calm, University of Massachusetts, Amherst

This presentation will explore the Nanotechnology Education Curriculum Development Program (NECDP), which is a project designed to create multimedia resources for educational professionals at the K-12, two-year higher education, and four-year higher education levels. The open-source module specifications include: accessibility, usability, and technical standards. Language level, science, and math concepts, however, will be variable according to the audience. The modules are easily modified by the end user and available on a no cost basis. Visual learning modules are made up of live video, 3-D, and 2-D animations. The NECDP is designed to bring educational awareness about the “how” and “why” behind nano-scale manufacturing.

Presenter Bios:



Marlene Bourne, President and Principal Analyst of Bourne Research LLC, is internationally recognized as one of the leading experts on MEMS (Micro-Electro-Mechanical Systems) and its convergence with nanotechnology. With more than a decade of expertise as an industry analyst, her technology and market insight extends from the chip to the end-use product, with both broad and deep knowledge of countless products, companies, markets and applications. Ms. Bourne produces and hosts a weekly radio show called *The Bourne Report*.



Doug Buckley is the Chair of Electrical Engineering Technology at Springfield Technical Community College in Springfield Massachusetts. A pioneer in the field of robotics and automation education, Doug has worked as both a vocational instructor and college professor in the field computers, of robotics and automation. Developing programs and curriculum in industrial robotics, nanotechnology, entrepreneurship and renewable energy is his major focus.

His background includes many years prior to teaching in industry for companies such as United Technologies, Digital Equipment Corporation, and Kaman Corporation. In addition, he has owned and operated businesses in computer manufacturing and automation.

Doug is currently a CO-PI for a NSF Nanoscience Education Grant with the University of Massachusetts, Amherst through the Center for Hierarchical Manufacturing. He has also developed and teaches honor-level classes in innovation, invention and entrepreneurship through a grant from the National Collegiate Inventors & Innovators Alliance. His participation in the field has included seven years of experience and training in semiconductor manufacturing, MEMS and nanotechnology.

Doug holds degrees from Springfield Technical Community College, The University of Massachusetts Amherst and Westfield State College.



Yitzi Calm is a student from Sharon, Massachusetts who is interested in nanotechnology. He hopes to acquire his Ph.D. and some day work for a top semiconductor or other manufacturing company. His research efforts include work on "Fabrication of Nanowire Arrays With the Use of an Energetically Aligned Diblock Copolymer Template." His research has the potential to be used in denser computer chips to increase efficiency and save money. Yitzi is currently an undergraduate at the University of Massachusetts, Amherst.