



Title: Demonstrating MEMS in the Classroom Presented by the Southwest Center for Microsystems Education (SCME)

Date/Time: Tuesday, July 29, 8:30 AM – 5:00 PM

Location: Renaissance Austin Hotel

Cost: \$160



Description: Micro-Electro-Mechanical Systems (MEMS) are dynamic devices that have components smaller than an ant's foot. They can sense, think, act and communicate. MEMS-based devices are found in everyday applications including electronic toys, appliances, automotive safety and navigation systems, health care monitoring equipment, cell phones, PDAs, big-screen displays, inkjet print heads, and the Nintendo Wii controller.

MEMS is a rapidly growing, global high tech industry sector. There is a strong need for well-educated technologists to support this rapid growth. The Southwest Center for Microsystems Education (SCME) is sponsoring this fourth annual workshop to excite educators into making MEMS a part of their curricula.

SCME will offer several parallel running mini-workshops, many including hands-on activities and demonstrations. All mini-workshops will include materials that can be used in the classroom by instructors and students – soft and hard copies and links to acquiring complete classroom kits. A common thread of these mini-workshops is to encourage educators to use these materials in the classroom in order to give students a vision into this exciting field, something to consider as a possible career path and relevance to their science, technology, engineering, and mathematics courses.

This one-day workshop encompasses several MEMS-related mini-workshops demonstrating:

- MEMS Advanced Design – Sandia National Laboratories' SUMMiT V™ CAD-based system
- Where are the jobs? What are they? What skills do we need?
- Accelerometers on Cantilevers ("Hobo" on a stick) make the connection to BioMEMS and Chemical Sensor Arrays. Cantilevers enable nanotechnology with coupled arrays
- Resistivity, Strain Gauges, Wheatstone Bridges applied to a working Pressure Sensor macro model
- Crystallography in action – Miller Indices and Anisotropic etching
- Pressure Sensor Characterization – yield, performance – applying statistics can be fun!
- Pressure Sensor Fabrication Kit – Find the defect in the process!

Kits, sharable content objects (SCO's), and animations will be demonstrated and displayed throughout the workshop.

Presenters:

- Dr. "Al" Lloyd West – Director of Environment, Safety, and Health Sandia National Laboratories (retired); NVC Committee Member of the Southwest Center for Microsystems Education (SCME); former Director of the SCME.
- Ms. Barbara Lopez – Research Engineer, University of New Mexico Manufacturing (UNM) Engineering Program.
- Mr. Harold Madsen – Engineer, UNM Manufacturing Training and Technology Center (MTTC).
- Mr. Fabian Lopez – Faculty, Central New Mexico Community College (CNM), Co-PI SCME.

- Mr. Adrian Sebborn – Teacher, Southwest Vermont Career Development Center.
- Mr. Joseph “Smokey” Trujillo – Teacher, Santa Fe Indian School; Faculty Advisory Board Member, MATEC.
- Dr. Patricia Phelps – Biology Professor, Austin Community College
- David Hata – SCME External Evaluator
- Dr. Matthias Pleil – Research Associate Professor, UNM; Faculty CNM; PI SCME.