



Applications and capabilities of S100 nanomanipulator in academic research

**Wednesday September 13, 2006
Babbio Bldg, Room 104, Time 11am**

Dr. John Randall, PhD
Chief Technical Officer
Zyvex, Richardson, TX

The predecessor to the S100 nanomanipulator was developed by scientists at Zyvex for internal research into nanostructured materials. The first measurements of the strength and stiffness of individual multiwall carbon nanotubes was carried out with such an instrument and published in Science. When Zyvex commercialized these manipulators it was with the express purpose of providing a platform for research by enabling a wide range of manipulation and measurement capabilities. The talk will center on manipulation and electrical measurements, which have been an area of keen interest for both industrial and academic laboratories. The technology of producing good ohmic contacts at the nanoscale will be discussed. There will also be discussion of work in the life sciences where the additional resolution available by a nanomanipulator provides capabilities over existing micromanipulators.

Dr. John Randall has been the Chief Technical Officer at Zyvex since September 2001. Prior to his current position he was a Distinguished Member of the Technical Staff at the Texas Instruments Kilby Research Center in Dallas, Texas, where he was the Leader of the Poly Silicon Gate patterning team which developed lithography and etching of sub-tenth micron gates for TI's most advanced Integrated Circuit technology. From 1985-1996, while a Senior Member of the Technical Staff in the Nanoelectronics Branch of TI, he developed high resolution processing techniques which resulted in several World's First accomplishments including: Quantum Dot Diode, Quantum Well Resonant Tunneling Transistor, Lateral heterostructure tunneling transistor, and room temperature quantum integrated circuit. Dr. Randall received BS, MS, and PhD degrees in Electrical Engineering from the University of Houston. He has over 100 refereed journal articles and 22 patents in the areas of semiconductor (optical, e-beam, ion-beam, and x-ray) lithography, quantum devices and circuits, metrology, ohmic contacts, atomic layer epitaxy, reactive ion etching, micro electro mechanical systems (MEMS), and x-ray fluorescence analysis.

Light refreshments will be served prior to seminar



**Co-sponsored by the
Department of Mechanical Engineering**