Wednesday Morning, October 17, 2007

Exhibitor Workshops

Room: Exhibit Hall - Session EW-WeB

Exhibitor Workshops

Moderator: R. Childs, Consultant

10:00am **EW-WeB1 Thiol Applications: Model Surfaces, Cutting Edge Technologies and Educational Platforms**, ***D.J. Graham***, Asemblon, Inc.

In this workshop we will highlight the use of alkanethiols in biomaterials, nanotechnology and molecular electronics. For decades, thiols have been used to control surface chemistry and study surface interactions in a wide range of fields. Thiols have again come into the forefront of research with the new developments in nanoparticles and increased interest in self-assembling systems. Come learn about how thiols are being used today and see a new educational kit developed by Asemblon for teaching about nanotechnology and surface modification

10:20am **EW-WeB2 Electronic and Magnetic Transport Measurements with Probe Stations**, ***J.R. Lindemuth***, Lake Shore Cryotronics

Electronic and magnetic transport based on tunneling is an extremely important technology area of nanotechnology and mesocopic devices. Tunneling of unpolarized electrons is the phenomena responsible for tunnel diodes and negative differential resistivity (NDR). NDR devices are one on the leading candidates for high speed, low power consumption switching devices required by ITRS. Tunneling of spin polarized electrons in magnetic tunnel junctions create large room temperature tunneling magnetoresistance that will be used in the next generation of magnetic read heads. Measurement of tunneling transport requires a stable controlled environment for both the temperature of the device and the magnetic field of the device. For convenience of measurement, a manipulated probes station with fast sample turn around is required. Using probes, instead of attached wires, is a very convenient method for doing electrical measurements. However, the probes can influence the electrical, temperature and magnetic environment of the sample. I will discus the impact of using probes and describe some of the systematic and random errors this technique can introduce into the measurement as well as methods to mitigate these effects. There are many different mechanisms and applications for tunneling. Each mechanism requires understanding and a careful design of the measurement system. Although there are many design criteria common to all tunneling experiments, each mechanism has its own special requirements. This presentation will show results of a variety of tunneling transport measurement, including NDR and TMR, with emphasis on methods and instrumentation for optimal results.

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