Notes on the Saturday morning session titled *Nanotechnology, Nanomedicine and Life Sciences* By Trent M. Guess (UMKC Dept. of Mechanical Engineering)

Kattesh Katti "Design and Development of Biocompatible Gold Nanoparticles for Imaging and Therapy"

Dr. Kattesh Katti, Professor of Radiology and Physics at the University of Missouri - Columbia, presented some of his work related to the development of gold nanonparticles for biomedical applications. Specifically, the biocompatible gold nanoparticles are being developed to assist optical imaging by marking specific tissues. The nanoparticles can also be used to mark tissues for treatment, such as radiation.

Delbert Day "Medical applications for nanocrystalline hydroxyapatite"

Dr. Delbert Day, Curators' Professor Emeritus of Ceramic Engineering at the University of Missouri – Rolla, shared his work on experiments with special glasses that react with bodily fluids to form hydroxyapatite. The glass mixture could be used to repair broken or diseased mineralized tissues.

Kevin Gillis "Microchip devices to measure hormone and neurotransmitter release: building a neuron-machine synapse"

Dr. Kevin Gillis, Assistant Professor of Biological Engineering at the University of Missouri – Columbia, spoke on ongoing work to develop microchips that act as biosensors for measuring cell secretions. These microchip devices could assess drugs used to modify neurotransmitter release.

Ken Klabunde "Reactive nanoparticles: Unusual chemical and biological properties"

Dr. Ken Klabunde, University Distinguished Professor of Chemisty at Kansas State University, presented work on solid nanoparticle powders comprised of various oxides that can be used to neutralize toxic and noxious substances. Dr. Klabunde is the founder of NanoScale Materials where the nonoparticle oxides are commercially available.

Sheila Grant "The role of nanotechnology in biosensor development"

Dr. Sheila Grant, Assistant Professor of Biological Engineering at the University of Missouri – Columbia, shared some of her work on improving the biocompatibility of implantable biosensors. Research utilizing the methods of nanotechnology for sensor improvement was discussed.

Gabor Forgacs " Measuring and using intracellular Viscoelasticity at the nanoscale to improve on the yield of oocyte cryopreservation"

Dr. Gabor Forgacs, George H Vineyard Professor of Theoretical Physics at the University of Missouri – Kansas City, presented work on characterizing the viscoelastic properties

of oocyte cells through a combination of experimental and modeling techniques. Super-paramagnetic beads are injected into oocyte cells and magnetic pulses are then applied. The motion of the beads in response to the pulses is measured.

Bill Brooks "High Field Magnetic Resonance Imaging Facility: Resource for Regional Nanoscientists"

Dr. Bill Brooks, Professor of Neurobiology and Director of the Hoglund Brain Imaging Center, shared some of the capabilities of the 9.4 Tesla Varian system MR imaging system located at the Hoglund Brain Imaging center at the University of Kansas Medical Center.