

## SPOT LIGHT

ENGINEERING RESEARCH AT UGA

## NANOTECH AT UGA

## BIOCHEM &amp; MOLECULAR BIOLOGY

**Michael Adams**, The application of highly stable biological molecules in nanoengineering.

**John Lee**, Structure and engineering of bioluminescent proteins for application in nanobiotechnological devices

## BIOL &amp; AGRIL ENGINEERING

**Elliot Altman**, One-bead one-peptide technologies.

**William Kisaalita**, Microfabricated structures of biosensors, cell and tissue engineering.

**S. Edward Law**, Electrostatic forces for management of the motion of cellular and sub-cellular particles at micro- and nanoscale levels.

**Brahm Verma**, Systems modeling and artificial intelligence techniques.

**Guigen Zhang**, Micromechanics and micromechanical testing of biological materials and micro biomedical devices.

## CELL BIO / ELECTRON MICROSCOPY

**Mark Farmer**, Development of nanoscale imaging techniques.

## CHEMISTRY

**Nigel Adams**, Gas phase synthesis and modification of nanoscale materials.

**James Anderson**, Electrochemical studies of nanoscale process.

**Richard Dluhy**, Interfacial vibrational spectroscopy and imaging. Macromolecular assemblies and organized two-dimensional nanoscale structures at interfaces.

**Timothy M. Dore**, Nanotechnology applications in biotechnology, imaging, and bioengineering.

**Michael A. Duncan**, Synthesis of nanocrystal and nanocluster materials and their characterization with laser and mass spectroscopy.

**Chuck Kotal**, Photochemical imaging at the nanoscale level.

**George Majetich**, Synthesis of bio-conjugates on magnetic nanoclusters.

**Greg Robinson**, Synthesis of organometallic compounds, nanoscale precursors, containing the elements aluminum, gallium, phosphorus, indium, arsenic, and nitrogen.

**John Stickney**, Electrodeposition of nanoclusters and superlattices using electrochemical atomic layer epitaxy.

## GENETICS

**Jonathan Arnold**, Measuring protein/DNA interactions within a living cell.

## PHARMACEUTICS

**D. Robert Lu**, Nanoparticle based targeted drug delivery.

## PHYSIOLOGY &amp; PHARMACOLOGY

**Royal A. McGraw**, Structuring matter at the nanoscale via DNA-directed self-assembly.

## PHYSICS &amp; ASTRONOMY

**William M. Dennis**, Linear and nonlinear spectroscopy of nanoscale systems and nanocomposites.

**Michael R. Geller**, Phonons in mesoscopic and nanoscale systems.

**Uwe Happek**, Nanostructured semiconductors self assembly of artificial DNA strands, and spectroscopy of nanoscale dielectric particles.

**David P. Landau**, Large scale Monte Carlo, spin dynamics, and molecular dynamics simulations of models for a large range of physical applications.

**Steven Lewis**, Theory of the structure and dynamics of nanocrystals, surfaces, and superlattices.

**Richard S. Meltzer**, Optical properties and high resolution spectroscopy of doped insulating nanoparticles and nanocomposites.

**H. Bernd Schüttler**, Quantum many-body theory of metallic nanoparticle clusters.

## NANOTECHNOLOGY

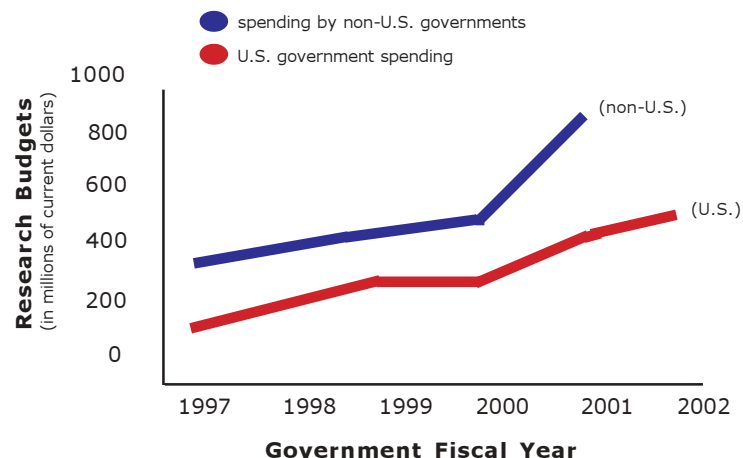
UGA Faculty Propose  
Nanoscale Science and Engineering Center

Richard Feynman's visionary and oft-quoted 1959 talk, *There's Plenty of Room at the Bottom*, was nanotechnology's defining moment. Forty-two years later, researchers have just begun to take steps towards Feynman's grand vision of engineering complex machines, materials and circuits atom by atom.

Nanotechnology is the study and manufacture of structures and devices of nanometer dimensions (the prefix "nano" means one-billionth). There is incredible promise of creating nanostructures with superior electrical, chemical, mechanical and optical properties. Miniscule sensors to investigate cells within the human body and nanowires 100 times stronger than steel are examples of nanotech possibilities envisioned today. Advancements in nanotechnology will have an impact on such diverse fields as materials and manufacturing, nanoelectronics and computer technology, pharmaceutical and health, aeronautics and space exploration, environment and energy, biotechnology, food and agriculture and national security.

At the April 2001 UGA faculty symposium, *Towards 2010: Comprehensive Engineering at UGA*, participants identified nanotechnology as an important theme for advancing engineering and science at the University of Georgia. A task group chaired by Bill Dennis, Physics, and Brahm Verma, Biological and Agricultural Engineering, explored the existing UGA programs, facilities and faculty interest in nanotechnology. The task group identified twenty seven UGA faculty members (see sidebar *Nanotech at UGA*) from eight departments having expertise, programs and strong interest in nanotechnology; existing nanotechnology related research facilities; and potential corporate partners. The task group has recommended the creation of a Nanoscale Science and Engineering Center (NanoSEC) to bring a focus to nanotechnology at the University of Georgia. This recommendation of the Faculty of Engineering is currently under consideration by the Vice-President for Research and Associate Provost.

## THE INCREASING COMMITMENT OF NANOTECH FUNDING SOURCES



Source: Stix, Gary. (2001, Sept.). "Little Big Science." *Scientific American*, 32-37.

