

Department of Physics-focus 2003-2004

[pjenkins](#), 02/04/2004 - 01:22 PM

Department of Physics

Focus Areas

Department Philosophy -- The Department of Physics is strongly committed to excellence in teaching, service, *and* research. It has a strong tradition of teaching excellence and insists that each faculty member hired or tenured demonstrate the requisite pedagogical and communicative skills. Keenly aware of the deficiencies of pre collegiate education in science and mathematics in the region and the economic consequences thereof, it devotes appreciable faculty time and effort to programs that enrich the science education of area school children and their teachers and which seek to improve the awareness and access of traditionally underrepresented groups to careers in science, mathematics and engineering. Its major research foci are in two overlapping areas, computational physics and biomaterials science and device physics.

Computational Physics

Achar, Professor, mainly working on fractional calculus, which opens new pathways to understanding the mechanical and transport properties of polymeric biomaterials.

Franceschetti, Donald, Professor, working on modeling of ionic conductors, pertinent to electrochemical biosensors and on computational models of cognition.

Hanneken, John, Associate Professor, also working on fractional calculus.

Laradji, Mohamed, Assistant Professor, Computational modeling of complex fluids

Schmelz, Joan, Professor, Analysis of complex data sets from satellite observations of the solar atmosphere.

Biomaterials science and device physics

Hanneken, John, Associate Professor, hydrogen absorption by metals.

Jahan, Professor and Chair, Characterization and control of free radicals in implantable biopolymers.

Mishra, Sanjay, Assistant Professor, Characterization of magnetic nanoparticles, of relevance to directed drug delivery and MRI image enhancement.

Richter, Andrew, Assistant Professor, Characterization of organic thin films.

Ospeck, Mark, incoming Assistant professor, physics of hearing with relevance to audiology and inner ear prostheses

Interdisciplinary Activities

Aware of President Raines's emphasis on developing interdisciplinary research, and of the traditional role of physicists as members of interdisciplinary teams we note: Franceschetti and Laradji are Members of CROMIUM

Franceschetti has been included in heavily funded research projects in software

design for physics tutoring

Jahan is head of the Memphis Site of the NSF Industry/University Research Center for Bio-Surfaces, which has supported work in Biomedical Engineering, MMCS and Chemistry. Richter is a member of the Center, Mishra holds a partial appointment in the Integrated Microscopy Center.
