GSOE NSF CAREER Award Winners
Enthusiastically Mentor Undergraduate Research

Five GSOE faculty members (photographed above left to right) recently received the National Science Foundation's Faculty Early Career Development (CAREER) Award. The grant supports junior faculty members who have successfully bridged their research activities with educational opportunities for students.

**DR. BINGMEI FU**, a professor of Biomedical Engineering, investigates the mechanisms by which vascular endothelial growth factor induces permeability of microvessels in certain frog tissues. The educational component of her plan focuses on creating research education seminars and conferences, supervising graduate students, creating new graduate level courses, relevant introductory undergraduate courses and providing research training for undergraduate and high school students, including outreach efforts to women and minorities and developing international research and education collaborations with West China Medical University and the National University of Singapore.

**DR. JIZHONG XIAO**, a professor in the Department of Electrical Engineering, is extending his previous robotics research to develop a general framework to address planning, control and coordination issues pertaining to robots that can operate in 3-D environments, especially in constrained urban locales. Dr. Xiao successfully uses robotics in his teaching. He advises the Robotics Club and intends to create mentored research experiences for students, robotics programs targeted for K-12 education, and other outreach activities to improve the pipeline of students interested in robotics.

**DR. ILONA KRETZSCHMAR** is a professor of Chemical Engineering and has developed a model system for achieving self-assembly of 3-D structures of nanoparticles, which may serve as surfactants, sensors, and particle probes. The students will profit from the active research in the area of molecularly directed particle assembly. The organization of an International Research Experience for Undergraduates program provides CCNY undergraduates with exposure to research at an international level. Further, the individual mentoring proposed will provide female and minority students with a mentoring network early on in their careers. Collaboration with the Louis Stokes Alliance for Minority Participation (LSAMP) will channel students from underrepresented groups into the program.

**DR. KOLLURU SUBRAMANIAM**, a professor of Civil Engineering, investigates and studies methods to monitor and assess the microstructure of engineered high-performance concrete as well as determining the relationship between the microstructure of the cementitious phase and the strength and durability characteristics of the concrete. As part of the project Dr. Subramaniam actively recruited students on all levels, focusing especially on minority students and minority female high school students in the Harlem area. In addition, the development of an innovative web-based virtual laboratory is an essential element of this study’s educational component.

**DR. JACKIE JIE LI**, a professor of Mechanical Engineering (ME), is currently researching the microstructure of ferroelectric composites to better design smart materials. These have properties that can be altered and controlled by environmental factors. The education component consists of the creation of a senior-level course on smart materials, integration of the research into senior design projects, updating the undergraduate ME curriculum to include the principles of ferroelectrics and ferroelectric composites, and providing hands-on experiences on the fabrication of PZT samples and measurement of electromechanical coupling behavior of ferroelectrics.