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Faculty and Research Interests

Computer Aided Molecular Design, Process Design, Computational Biology

Donald G. Baird  Alexander F. Giacco Prof. (Wisconsin)
Polymer Processing and Rheology

Michael Bortner  Assist. Professor (Virginia Tech)
Polymer Nanocomposites, Nanostructured Materials, Polymer Morphology and Structure-Property Relationships, Surface and Interface Phenomena in Polymers

David F. Cox  Professor and Dept. Head (Florida)
Surface Science and Catalysis, Computational Chemistry

Richey M. Davis  Professor (Princeton)
Polymers at Interfaces and in Solution, Colloid Chemistry, Self-Assembled Functional Polymer Films

Sanket A. Deshmukh  Assist. Professor (Univ. College Dublin)
Multi-scale Modeling of Hybrid Materials, Development of Computational Models and Methods, Polymers, Metals, Carbon Nanostructures

William Ducker  Professor and Graduate Program Chair (Australian National Univ.)
Interfacial Engineering: Bacterial Adhesion, Colloids, Surface Forces, Adsorption

Aaron S. Goldstein  Assoc. Professor (Carnegie Mellon)
Tissue Engineering, Biomaterials, Biointerfaces

Ayman Karim  Assoc. Professor (New Mexico)
Heterogeneous Catalysis, Colloidal Nanoparticles Synthesis, Microfluidics, In-Situ/Operando Characterization

Erdogan Kiran  Professor (Princeton)
Supercritical Fluids, Polymeric Materials, High-Pressure Techniques

Y. A. Liu  Frank C. Vilbrandt Professor (Princeton)

Chang Lu  Fred W. Bull Professor (Illinois)
Microfluidics for Single Cell Analysis, Gene Delivery and Tissue Engineering, Microscale Fluid Mechanics, Flow Cytometry, Microchemical Systems

Faculty and Research Interests

Stephen M. Martin  Assoc. Professor (Minnesota)
Soft Materials, Self-Assembly, Interfaces

Padma Rajagopalan  Robert E. Hord, Jr. Prof. (Brown)
Self-Assembled Biopolymers, Cellular & Tissue Eng.

Rong Tong  Assoc. Professor (Illinois)
Tissue Engineering, Biopolymers, Controlled Release Drug Delivery, Cell-Biomaterial Interactions

Hongliang Xin  Assoc. Professor (Michigan)
Fundamental Surface Reactivity and Catalysis, Electronic and Atomistic Dynamics at Interfaces and Nanoparticles, Kinetic Theory of Charge Transfer Processes
GRADUATE PROGRAM

Chemical engineering is a bridge between basic science and traditional engineering. It transforms our knowledge in chemical, physical, biological and life sciences into products and processes that benefit society. Chemical engineering plays a prominent role in all realistic solutions to national and international problems of energy, environment, and food. Progress toward solutions in these areas rests with judicious application of science. Such is the domain of the chemical engineer.

Graduate research in the chemical engineering department at Virginia Tech involves components of physics, mathematics, chemistry, biochemistry, and microbiology. Active research areas include polymer science and engineering, composite materials processing, colloid and surface chemistry, solid state chemistry and physics, self assembly and nanotechnology, biochemical and tissue engineering, catalysis and surface science, pollution prevention and computer-aided design, and supercritical fluid science and technology.

Much of the research in the department requires multidisciplinary efforts, and chemical engineering students develop strong interactions with students and faculty in other departments and colleges. Many students are actively involved in one of several interdisciplinary research programs, such as the Macromolecules and Interfaces Institute or the School of Biomedical Engineering and Sciences.

Requirements

Requirements for the M.S. and Ph.D. degrees include a core of 14 credits in:

- Transport Phenomena (5 credits)
- Thermodynamics (3 credits)
- Kinetics (3 credits)
- Mathematics (3 credits)

These courses are supplemented with electives chosen in support of the thesis research or the student's special interests. Ph.D. students must pass a qualifying examination and defend a preliminary proposal prior to completing their dissertation. A thesis is required for all M.S. students.

Students with undergraduate degrees outside of chemical engineering, such as chemistry, biochemistry, microbiology, and degrees in other engineering disciplines, are also welcome. These students typically take one or more undergraduate chemical engineering courses to prepare for the required graduate courses.

Multidisciplinary Centers and Programs

- Center for Composite Materials and Structures
- Center for Self-Assembled Nanostructures and Devices
- Institute for Critical Technology and Applied Science
- Macromolecules and Interfaces Institute
- Macromolecular Science and Engineering Program
- School of Biomedical Engineering and Sciences
- Virginia Bioinformatics Institute

APPLICATION

Interested students may apply on-line by visiting the Graduate School website at:

http://www.graduateschool.vt.edu

Financial Assistance

The Department offers competitive graduate stipends in the form of Graduate Teaching or Graduate Research Assistantships. These assistantships also include a tuition waiver. There are also fellowships available through the Graduate School and the College of Engineering, as well as externally funded fellowships for which students may apply. Exceptional applicants will be considered for the prestigious Robert Hord Fellowships, which provide significantly higher stipends. Students who purchase the university sponsored health insurance will have 80% of their premiums paid by the university.

Blacksburg Life

Blacksburg, located in Montgomery Country in southwestern Virginia (Blue Ridge Mountains), has all the comforts of small town life with many features of the big city. It lies 40 miles southwest of Roanoke, Virginia and 270 miles south of Washington, D.C., off Interstate 81. Blacksburg covers almost 19 square miles, at an elevation of about 2,000 feet above sea level. The current population is approximately 40,000, which includes the Virginia Tech student population. Blacksburg is served by a public transit system nationally recognized for excellence. The area claims 74 restaurants, 12 lodging facilities, 45 churches, seven shopping areas, two movie theaters, and three golf courses. Blacksburg offers affordable living, in a community with a variety of cultural activities and surrounded by a variety of recreational areas.

Located in southwestern Virginia, in the Blue Ridge Mountains