

Artie McFerrin Department of CHEMICAL ENGINEERING

Enrollment Fall 2009

| | | | |
|-------------------------------|------------|--------------------------|------------|
| Undergraduate Students | 852 | Graduate Students | 177 |
| Average SAT Score | 1296 | Ph.D. | 92 |
| | | Master's | 85 |

Quality Indicators

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|------------------------------|-----------|--|-------------------------------|---|
| Total Faculty | 33 | U.S. News & World Report Rankings | Endowed Chair Holders | 3 |
| Professors | 13 | Rankings Among Public Institutions | Endowed Professorship Holders | 8 |
| Associate Professors | 3 | 13 Undergraduate | | |
| Assistant Professors | 9 | 18 Graduate | | |
| Non-tenured/Non-tenure Track | 8 | | | |

Centers and Laboratories

Mary Kay O'Connor Process Safety Center (TEES)

Research Areas

Biomedical and Biomolecular

- Artificial Tissues
- Biofilms
- Biofuel Production, Including Biohydrogen
- Biomaterials
- Biosensing
- Cellular Engineering
- Conversion of Biomass
- Drug Delivery
- Metabolic Engineering
- Micro-encapsulation
- Protein Engineering
- Systems Engineering

Complex Fluids

- Chemical Waves in Hydrogels
- Crystallization and Deposition
- Light Scattering
- Mass Transfer
- Molecular Level Simulation
- Particle Technology and Colloidal Science
- Polymer Adsorption and Adhesion
- Rheological Properties
- Wetting and Thin Film Studies

Computational Chemical Engineering

- Ab Initio Calculations
- Atomistic Modeling
- Density Functional Theory
- Materials Modeling
- Nanotechnology
- Reaction Mechanisms and Rates
- Thermodynamic Property Prediction

Environmental

- Absorptive Separations
- Bioremediation
- Catalytic and Advanced Oxidation
- Integrated Biorefineries
- Organic Synthesis

- Physical/Chemical Separation Techniques
- Solvent Replacement
- Supercritical Fluid Solvents
- Wastewater Clean-Up

Materials

- Complex Multicomponent Systems
- Diffusion
- Electronic Materials
- Materials Processing
- Membrane Separations
- Polymer Properties
- Reaction Kinetics
- Rheology
- Solution Thermodynamics
- Structure Processing
- Thermodynamics
- Thin Films

Microelectronics

- Biochips
- Electrical Discharge Machining Process
- Electrode Erosion
- Mechanism of Plasma Processes
- Nano Electronics
- Novel Devices
- Particle Transport
- Plasma Phase Chemistry
- Semiconductor Devices
- Surface Reactions
- Thin Film Technologies
- Thin Film Transistors
- ULSIC

Microfluidics

- Controlled Emulsification
- Colloidal Self-Assembling

Modeling and Simulation

Nanotechnology

Process Safety

- Abnormal Situation Management
- Accident Database (Development and Analysis)
- Aerosol Generation and Modeling
- Calorimetry, Reactive Chemicals and Computational Chemistry
- Computational Fluid Dynamics Modeling
- Development of Analytical and Computational Tools
- Fires and Explosions
- Improve Process Design Software
- Inherently Safer Design and Technology
- LNG Design and Safety
- Metrics for Safety Systems
- Quantitative Risk Assessment
- Reliability and Availability
- Relief Systems Analysis
- Safety Culture and Climate
- Vapor Dispersion Modeling

Process Systems Engineering

- Process Design and Synthesis
- Process Integration
- Process Modeling, Operation and Control
- Process Optimization

Reaction Engineering

- Catalysis
- Determination of Kinetics
- Reactor Design and Configuration

Thermodynamics

- Correlations
- Equations of State
- Measurements
 - Densities
 - Phase Behavior