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For Information Contact:

Director of Graduate Studies
Department of Chemical Engineering
The University of Alabama
Box 870203
Tuscaloosa, AL 35487-0203
Phone: (205) 348-6450

Faculty:

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Capillary hydrodynamics, multiphase flows, enhanced heat transfer surfaces.
(256) 824-7313, rlc@che.uah.edu

Chien P. Chen - Ph.D. (Michigan State)
Professor
Multiphase flows, spray combustion, turbulence modeling, numerical methods in fluids and heat transfer.
(256) 824-6194, cchen@che.uah.edu

Krishnan K. Chittur - Ph.D. (Rice)
Professor
Protein adsorption to biomaterials, FTR/ATR at solid-liquid interfaces, biosensing.
(256) 824-6850, kchittur@che.uah.edu

Douglas G. Hayes - Ph.D. (Michigan)
Associate Professor
Enzyme reactions in nonaqueous media, separations involving biomolecules, lipids and surfactants, surfactant-based colloidal aggregates.
(256) 824-6874, dhayes@che.uah.edu

James E. Smith Jr. - Ph.D. (South Carolina)
Professor
Kinetics and catalysis, powdered materials processing, combustion diagnostics and fluids visualization using optical methods.
(256) 824-6439, jesmith@che.uah.edu

Jeffrey J. Weimer - Ph.D. (MIT)
Associate Professor, *Joint Appointment in Chemistry*
Adhesion, biomaterials surface properties, thin film growth, surface spectroscopies, scanning prode microscopies.
(256) 824-6954, jjweimer@matsci.uah.edu

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Graduate Program Officer
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James Beckman, Ph.D., Arizona. Unit operations, applied mathematics, energy-efficient water purification, fractionation, CMP reclamation

Veronica Burrows, Ph.D., Princeton. Surface science, environmental sensors, semiconductor processing, interfacial chemical and physical processes in sensor processing

Ann Dillner, Ph.D., Illinois, Urbana-Champaign. Atmospheric particulate matter (aerosols) chemistry and physics, ultra fine aerosols, light scattering, climate and health effects of aerosols

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Michael Sierks, Ph.D., Iowa State. Protein engineering, biomedical engineering, enzyme kinetics, antibody engineering

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James Adams, Ph.D., Atomistic stimulation of metallic surfaces, adhesion, wear, and automotive catalysts, heavy metal toxicity

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Nikhilesh Chawla, Ph.D., Michigan. Lead-free solders, composit ematerials, powder metallurgy

Sandwip Dey, Ph.D., Alfred. Electro-ceramics, MOCVD and ALCVD, dielectrics: leakage, loss mechanisms and modeling

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Subhash Mahajan (Chair), Ph.D., Berkeley. Semiconductor defects, high temperature semiconductors, structural materials deformation

James Mayer, Ph.D., Purdue. Thin film processing, ion beam modification of materials

Nate Newman, Ph.D., Stanford. Growth, characterization, and modeling of solid-state materials

S. Tom Picraux, Ph.D. Caltech. Nanostructured materials, epitaxy, and thin-film electronic materials

Karl Sieradzki, Ph.D. Syracuse. Fracture of solids, thin-film deposition and growth, corrosion

Mark van Schilfgaarde, Ph.D. Stanford. Methods and applications of electronic structure theory, dilute magnetic semiconductors, GW approximation

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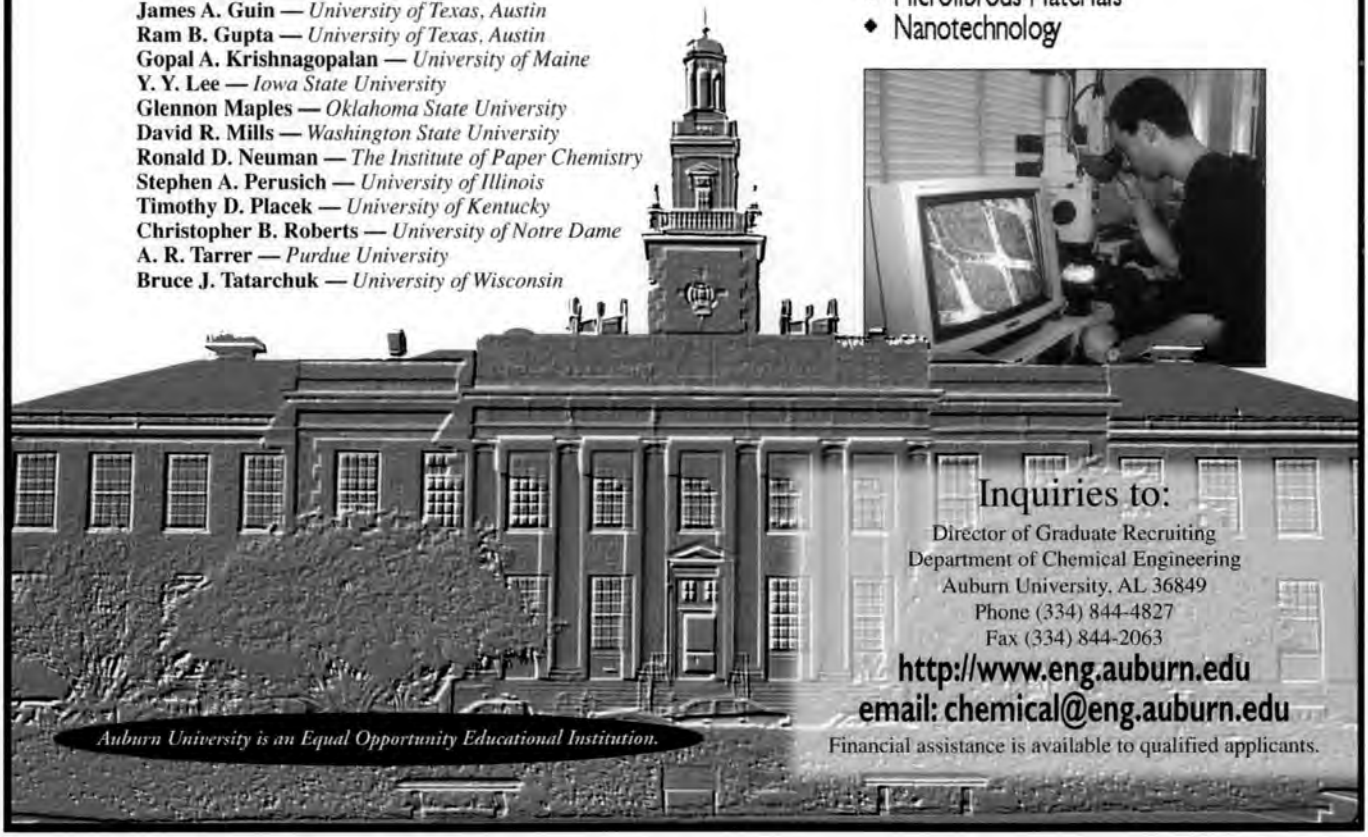

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Stephanie R. Dungan, Associate Professor • Ph.D., Massachusetts Institute of Technology, 1992 • *Micelle transport, colloid and interfacial science in food processing*

Roland Faller, Assistant Professor • Ph.D., Max-Planck Institute for Polymer Research, 2000 • *Molecular modeling of soft-condensed matter*

Bruce C. Gates, Professor • Ph.D., University of Washington, Seattle, 1966 • *Catalysis, solid superacid catalysis, zeolite catalysts, bimetallic catalysts, catalysis by metal clusters*

Jeffery C. Gibeling, Professor • Ph.D., Stanford University, 1979 • *Deformation, fracture and fatigue of metals, layered composites and bone*

Joanna R. Groza, Professor • Ph.D., Polytechnic Institute, Bucharest, 1972 • *Plasma activated sintering and processing of nanostructured materials*

Brian G. Higgins, Professor • Ph.D., University of Minnesota, 1980 • *Fluid mechanics and interfacial phenomena, sol gel processing, coating flows*

David G. Howitt, Professor • Ph.D., University of California, Berkeley, 1976 • *Forensic and failure analysis, electron microscopy, ignition and combustion processes in materials*

Alan P. Jackman, Professor • Ph.D., University of Minnesota, 1968 • *Protein production in plant cell cultures, bioremediation*

Tonya L. Kuhl, Assistant Professor • Ph.D., University of California, Santa Barbara, 1996 • *Biomaterials, membrane interactions, intermolecular and intersurface forces in complex fluid systems*

Enrique J. Lavernia, Professor • Ph.D., Massachusetts Institute of Technology, 1986 • *Synthesis of structural materials and composites; nanostructured materials and composites, thermal spray processing*

Jörg F. Löffler, Assistant Professor • Ph.D., Swiss Federal Institute of Technology (ETH), Zürich, 1997 • *Nanostructured and amorphous materials; magnetic, structural, and thermophysical properties, neutron and x-ray scattering*

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Amiya K. Mukherjee, Professor • D.Phil., University of Oxford, 1962 • *Superplasticity of intermetallic alloys and ceramics, high temperature creep deformation*

Zuhair A. Munir, Professor • Ph.D., University of California, Berkeley, 1963 • *Combustion synthesis, multilayer combustion systems, functionally graded materials*

Alexandra Navrotsky, Professor • Ph.D., University of Chicago, 1967 • *Thermodynamics and solid state chemistry; high temperature calorimetry*

Ahmet N. Palazoglu, Professor • Ph.D., Rensselaer Polytechnic Institute, 1984 • *Process control and process design of environmentally benign processes*

Ronald J. Phillips, Professor • Ph.D., Massachusetts Institute of Technology, 1989 • *Transport processes in bioseparations, Newtonian and non-Newtonian suspension mechanics*

Robert L. Powell, Professor • Ph.D., Johns Hopkins University, 1978 • *Rheology, suspension mechanics, magnetic resonance imaging of suspensions*

Subhash H. Risbud, Professor and Chair • Ph.D., University of California, Berkeley, 1976 • *Semiconductor quantum dots, high T_c superconducting ceramics, polymer composites for optics*

Dewey D.Y. Ryu, Professor • Ph.D., Massachusetts Institute of Technology, 1967 • *Biomolecular process engineering and recombinant bioprocess technology*

Julie M. Schoenung, Associate Professor • Ph.D., Massachusetts Institute of Technology, 1987 • *Materials systems analysis; pollution prevention and waste minimization; process economics*

James F. Shackelford, Professor • Ph.D., University of California, Berkeley, 1971 • *Structure of materials, biomaterials, nondestructive testing of engineering materials*

J.M. Smith, Professor Emeritus • Sc.D., Massachusetts Institute of Technology, 1943 • *Chemical kinetics and reactor design*

Pieter Stroeve, Professor • Sc.D., Massachusetts Institute of Technology, 1973 • *Membrane separations, Langmuir Blodgett films, colloid and surface science*

Stephen Whitaker, Professor • Ph.D., University of Delaware, 1959 • *Multiphase transport phenomena*

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- Bioremediation
- Ceramics
- Combustion
- Composite Materials
- Control and Optimization
- Environmental Engineering
- Interfacial Engineering
- Materials Processing
- Mechanical Properties
- Metabolic Engineering
- Microelectronics Processing and Modeling
- Microstructure of Materials
- Nanocrystalline Materials
- Nucleation, Chrystallization and Glass Transition Process
- Polymers
- Recombinant Cell Technology
- Separation Processes
- Sol-Gel Processing
- Two-Phase Flow
- Water Pollution Control

CHEMICAL ENGINEERING AT

UCLA

RESEARCH AREAS

- Aerosol Science and Technology
- Biochemical Engineering
- Combinatorial Catalysis
- Complex Systems Engineering
- Electrochemistry
- Membranes
- Molecular and Cellular Bioengineering
- Pollution Prevention
- Polymer Engineering
- Process Design, Optimization, Dynamics, and Control
- Reaction Kinetics and Combustion
- Semiconductor Manufacturing

FACULTY

J. P. Chang

P. D. Christofides

Y. Cohen

J. Davis
(Vice Chancellor for Information Technology)

S. K. Friedlander

R. F. Hicks

E. L. Knuth *(Prof. Emeritus)*

J. C. Liao

V. Manousiouthakis

H. G. Monbouquette

K. Nobe

L. B. Robinson *(Prof. Emeritus)*

S. M. Senkan

Y. Tang

W. D. Van Vorst *(Prof. Emeritus)*

V. L. Vilker *(Prof. Emeritus)*

A.R. Wazzan

PROGRAMS

UCLA's Chemical Engineering Department offers a program of teaching and research linking fundamental engineering science and industrial practice. Our Department has strong graduate research programs in Bioengineering, Energy and Environment, Semiconductor Manufacturing, Engineering of Materials, and Process and Control Systems Engineering.

Fellowships are available for outstanding applicants interested in Ph.D. degree programs. A fellowship includes a waiver of tuition and fees plus a stipend.

Located five miles from the Pacific Coast, UCLA's attractive 417-acre campus extends from Bel Air to Westwood Village. Students have access to the highly regarded science programs and to a variety of experiences in theatre, music, art, and sports on campus.

CONTACT

Admissions Officer • Chemical Engineering Department
5531 Boelter Hall • UCLA • Los Angeles, CA 90095-1592
Telephone at (310) 825-9063 or visit us at www.chemeng.ucla.edu

University of California, Riverside
Department of Chemical and Environmental Engineering

The Graduate Program in Chemical and Environmental Engineering offers training leading to the degrees of Master of Science and Doctor of Philosophy. All applicants are required to submit scores from the general aptitude Graduate Record Examination (GRE). For more information and application materials, write:

Graduate Advisor
Department of Chemical and
Environmental Engineering
University of California
Riverside CA 92521

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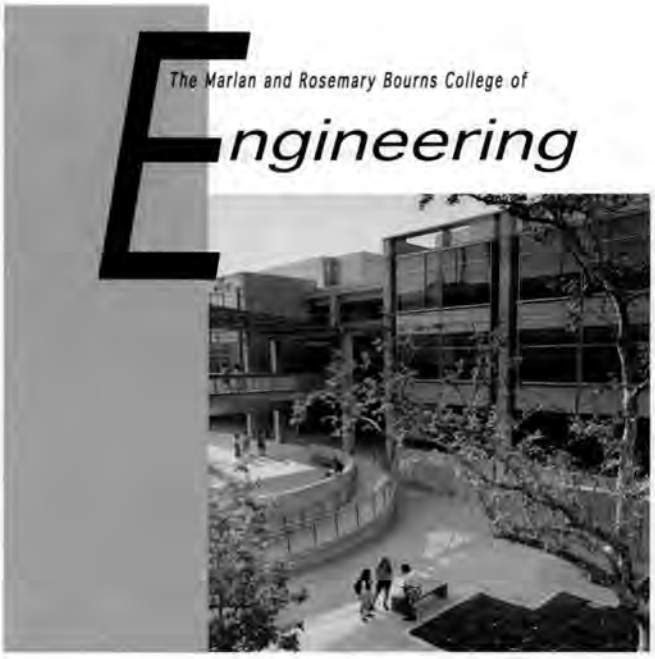
http://www.engr.ucr.edu/chemenv



Faculty

Wilfred Chen (Cal Tech) *Environmental Biotechnology, Microbial Engineering, Biocatalysis*

David R. Cocker (Caltech) *Air Quality Systems Engineering*

Marc Deshusses (ETH, Zurich) *Environmental Biotechnology, Bioremediation, Modeling*

Robert C. Haddon (Penn State) *Carbon Nanotubes, Advanced Materials*

Eric M.V. Hoek (Yale) *Environmental Membrane Processes, Collodial and Interfacial Phenomena*

Mark R. Matsumoto (UC Davis) *Water and Wastewater Treatment, Hazardous Waste, Soil Remediation*

Ashok Mulchandani (McGill) *Bioengineering, Biomaterials, Biosensors, Environmental Biotechnology*

Joseph M. Norbeck (Nebraska) *Advanced Vehicle Technology, Air Pollutants, Renewable Fuels*

Mihri Ozkan (UC Sn Diego) *Biomedical Microdevices, Bio-MEMS and Bio-Photonics*

Anders O. Wistrom (UC Davis) *Particulate and Colloidal Systems*

Jianzhong Wu (UC Berkeley) *Molecular Simulation, Theory of Complex Fluids, Nanomaterials*

Yushan Yan (CalTech) *Zeolite Thin Films, Fuel Cells, Nanostructured Materials, Catalysis*

The 1,200-acre Riverside campus of the University of California is located 50 miles east of Los Angeles within easy driving distance to most of the major cultural and recreational offerings in Southern California. In addition, it is virtually equidistant from the desert, the mountains, and the ocean.

UNIVERSITY OF CALIFORNIA

SANTA BARBARA

FACULTY AND RESEARCH INTERESTS

ERAY S. AYDIL Ph.D. *(Houston)* • Microelectronics and Plasma Processing

SANJOY BANERJEE Ph.D. *(Waterloo)* • Environmental Fluid Dynamics, Multiphase Flows, Turbulence, Computational Fluid Dynamics

BRADLEY F. CHMELKA Ph.D. *(U.C. Berkeley)* • Molecular Materials Science, Inorganic-Organic Composites, Porous Solids, NMR, Polymers

PATRICK S. DAUGHERTY Ph.D. *(Austin)* • Protein Engineering and Design, Library Technologies

MICHAEL F. DOHERTY Ph.D. *(Cambridge)* • Design and Synthesis, Separations, Process Dynamics and Control

FRANCIS J. DOYLE III Ph.D. *(Caltech)* • Process Control, Systems Biology, Nonlinear Dynamics

GLENN H. FREDRICKSON Ph.D. *(Stanford)* • Statistical Mechanics, Glasses, Polymers, Composites, Alloys

G.M. HOMSY Ph.D. *(Illinois)* • Fluid Mechanics, Instabilities, Porous Media, Interfacial Flows, Convective Heat Transfer

JACOB ISRAELACHVILI Ph.D. *(Cambridge)* Colloidal and Biomolecular Interactions, Adhesion and Friction

EDWARD J. KRAMER Ph.D. *(Carnegie-Mellon)* • Fracture and Diffusion of Polymers, Polymer Surfaces and Interfaces

L. GARY LEAL Ph.D. *(Stanford)* • Fluid Mechanics, Physics and Rheology of Complex Fluids, including Polymers, Suspensions, and Emulsions.

GLENN E. LUCAS Ph.D. *(M.I.T.)* • Mechanics of Materials, Structural Reliability.

DIMITRIOS MAROUDAS Ph.D. *(M.I.T.)* • Theoretical and Computational Materials Science, Electronic and Structural Materials

ERIC McFARLAND Ph.D. *(M.I.T.)* M.D. *(Harvard)* • Combinatorial Material Science, Environmental Catalysis, Surface Science

DUNCAN A. MELLICHAMP Ph.D. *(Purdue)* • Computer Control, Process Dynamics, Real-Time Computing

SAMIR MITRAGOTRI Ph.D. *(M.I.T.)* • Drug Delivery and Biomaterials

DAVID J. PINE Ph.D. *(Cornell)* **(Chair)** • Polymer, Surfactant, and Colloidal Physics, Multiple Light Scattering, Photonic Crystals

ORVILLE C. SANDALL Ph.D. *(Berkeley)* • Transport Phenomena, Separation Processes

DALE E. SEBORG Ph.D. *(Princeton)* • Process Control, Monitoring and Identification

MATTHEW V. TIRRELL Ph.D. *(Massachusetts)* • Polymers, Surfaces, Adhesion Biomaterials

T. G. THEOFANOUS Ph.D. *(Minnesota)* • Multiphase Flow, Risk Assessment and Management

JOSEPH A. ZASADZINSKI Ph.D. *(Minnesota)* • Surface and Interfacial Phenomena, Biomaterials

PROGRAMS AND FINANCIAL SUPPORT

The Department offers M.S. and Ph.D. degree programs Financial aid, including fellowships, teaching assistantships, and research assistantships, is available.

THE UNIVERSITY

One of the world's few seashore campuses, UCSB is located on the Pacific Coast 100 miles northwest of Los Angeles. The student enrollment is over 18,000. The metropolitan Santa Barbara area has over 150,000 residents and is famous for its mild, even climate.

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Konstantinos P. Giapis
Julia A. Kornfield
John H. Seinfeld
David A. Tirrell
Nicholas W. Tschoegl (Emeritus)
Zhen-Gang Wang

RESEARCH INTERESTS

Aerosol Science
Applied Mathematics
Atmospheric Chemistry and Physics
Biocatalysis and Bioreactor Engineering
Biomaterials
Biomedical Engineering
Bioseparations
Catalysis
Chemical Vapor Deposition
Combustion
Colloid Physics
Fluid Mechanics
Materials Processing
Microelectronics Processing
Microstructured Fluids
Polymer Science
Protein Engineering
Statistical Mechanics

For further information, write

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Graduate Degree Programs
• Doctorate
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• Thesis Option Master's
Research Thrust Areas
• Bioengineering
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• Envirochemical Engineering
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• Solid State Materials
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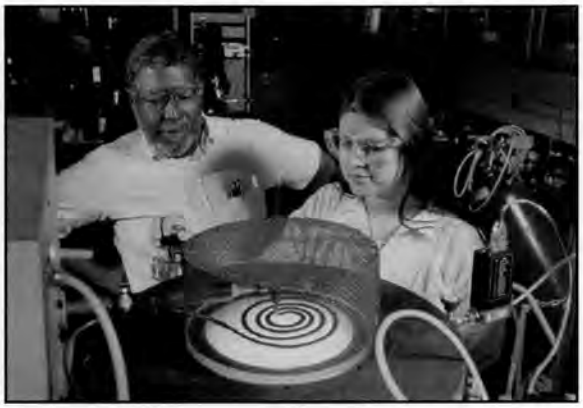
Case Western Reserve University

M.S. and Ph.D. Programs in Chemical Engineering



Faculty

John Angus
Harihara Baskaran
Robert Edwards
Donald Feke
Jeffrey Glass
Uziel Landau
Chung-Chiun Liu
J. Adin Mann
Heidi Martin
Philip Morrison
Peter Pintauro
Syed Qutubuddin
Robert Savinell
Thomas Zawodzinski

Research Opportunities

Advanced Energy Systems

Fuel Cells and Batteries
Hydrogen Infrastructure
Membrane Transport
Sensors
Microfabrication

Biomedical Engineering

Transport in Biological Systems
Biomedical Sensors and Actuators
Wound Healing
Inflammation and Cancer Metastasis
Neural Prosthetic Devices

Advanced Materials and Devices

Diamond and Nitride Synthesis
Coatings, Thin Films, and Surfaces
In-Situ Diagnostics
Fine Particle Science and Processing
Polymer Nanocomposites
Electrochemical Microfabrication

For more information on Graduate Research, Admission, and Financial Aid, contact:

Graduate Coordinator
Department of Chemical Engineering
E-mail: grad@cheme.cwru.edu
Web: http://www.cwru.edu/cse/eche

Case Western Reserve University
10900 Euclid Avenue
Cleveland, Ohio 44106-7217

Opportunities for Graduate Study in Chemical Engineering at the

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Carlos Co

Joel Fried

Rakesh Govind

Vadim Guliants

Daniel Hershey

Chia-chi Ho

Sun-Tak Hwang

Yuen-Koh Kao

Soon-Jai Khang

William Krantz

Jerry Y. S. Lin

Neville Pinto

Peter Smirniotis

The University of Cincinnati is committed to a policy of non-discrimination in awarding financial aid.

For Admission Information

Director, Graduate Studies
Chemical Engineering
PO Box 210171
University of Cincinnati
Cincinnati, Ohio 45221-0171

E-mail:
mcarden@alpha.che.uc.edu
or
jlin@alpha.che.uc.edu

The faculty and students in the Department of Chemical Engineering are engaged in a diverse range of exciting research topics. Assistantships and tuition scholarships are available to highly qualified applicants to the MS and PhD degree programs.

☐ **Advanced Materials**
Inorganic membranes, nanostructured materials, microporous and mesoporous materials, advanced materials processing, thin film technology, fuel cell and sensor materials, self-assembly

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☐ **Environmental Research**
Desulfurization and denitrication of flue gas, new technologies for coal combustion power plant, wastewater treatment, removal of volatile organic vapors

☐ **Membrane Technology**
Membrane synthesis and characterization, membrane gas separation, membrane reactors, sensors and probes, pervaporation, biomedical, food and environmental applications of membranes, high-temperature membrane technology, natural gas processing by membranes

☐ **Polymers**
Thermodynamics, polymer blends and composites, high-temperature polymers, hydrogels, polymer rheology, computational polymer science, polymerization technology

☐ **Separation Technologies**
Membrane separation, adsorption, chromatography, separation system synthesis, chemical reaction-based separation processes

Chemical Engineering at The City College of New York - CUNY

(The City University of New York)

A 154-year-old urban University, the oldest public University in America, on a 35-acre Gothic and modern campus in the greatest city in the world

FACULTY RESEARCH:

°**Andreas Acrivos***∞≤ Rheology of concentrated suspensions; Dielectrophoresis in flowing suspensions; Dynamical systems theory and chaotic particle motions

Alexander Couzis: Polymorph selective templated crystallization; Molecularly thin organic barrier layers; Surfactant facilitated wetting of hydrophobic surfaces; soft materials

°**Morton Denn**∞≤: Polymer science and rheology; non-Newtonian fluid mechanics

Lane Gilchrist: Bioengineering with cellular materials; Spectroscopy-guided molecular engineering; Structural studies of self-assembling proteins; Bioprocessing

Robert Graff: Coal liquefaction; Pollution prevention; Remediation

Leslie Isaacs: Preparation and characterization of novel optical materials; Recycling of pavement materials; Application of thermo-analytic techniques in materials research

Jae Lee: Theory of reactive distillation; Process design and control; Separations; Bioprocessing

°**Charles Maldarelli:** Interfacial fluid mechanics and stability; Surface tension driven flows and microfluidic applications; Surfactant adsorption, phase behavior and nanostructuring at interfaces

Irven Rinard: Process design methodol-ogy; Dynamic process simulation; Micro-reaction technology; Process control; Bioprocessing

David Rumschitzki: Transport and reaction aspects of arterial disease; Interfacial fluid mechanics and stability; Catalyst deactivation and reaction engineering

Reuel Shinnar∞: Advanced process design methods; Chemical reactor control; Spinodal decomposition of binary solvent mixtures; Process economics; Energy and environment systems

Carol Steiner: Polymer solutions and hydrogels; Soft biomaterials, Controlled release technology

Gabriel Tardos: Powder technology; Granulation; Fluid particle systems, Electrostatic effects; Air pollution

Sheldon Weinbaum•∞: Fluid mechanics, Biotransport in living tissue; Modeling of cellular mechanism of bone growth; bioheat transfer; kidney function

Herbert Weinstein: Fluidization and multiphase flows: multiphase chemical reactor analysis and design, Multiphase reactor analysis and design

ASSOCIATED FACULTY:

°**Jimmy Feng:** (Mechanical Eng.) Liquid crystals
°**Joel Koplik**: (Physics) Fluid mechanics; Molecular modeling; Transport in random media
°**Hernan Makse:** (Physics) Granular mechanics
°**Mark Shattuck:** (Physics) Experimental granular rheology; Computational granular fluid dynamics; Experimental spatio-temporal control of patterns

° *Levich Institute*
* *National Academy of Sciences*
∞ *National Academy of Engineering*
≤ *American Academy of Arts and Sciences*

CONTACT INFORMATION:

Department of Chemical Engineering
City College of New York
Convent Avenue at 140th Street
New York, NY 10031
www-che.engr.ccny.cuny.edu
che.hr@aol.com

Cleveland State University

Graduate Studies in Chemical and Applied Biomedical Engineering

Engineering Degrees

M. Sc.	Chemical Engineering
D. Eng.	Applied Biomedical Engineering
D. Eng.	Chemical Engineering

CSU Faculty

A. Annapragada (University of Michigan)
J.M. Belovich (University of Michigan)
G. Chatzimavroudis (Georgia Institute of Technology)
G.A. Coulman (Case Western Reserve University)
J.E. Gatica (State University of New York at Buffalo)
B. Ghorashi (Ohio State University)
E.S. Godleski (Cornell University)
R. Lustig (Institute of Thermo- and Fluiddynamics of the Ruhr-University Bochum, Germany)
D.B. Shah (Michigan State University)
O. Talu (Arizona State University)
S.N. Tewari (Purdue University)
S. Ungarala (Michigan Technological University)

CCF Collaborating Faculty

J. Arendt (Ohio State University)
B. Davis (Pennsylvania State University)
K. Derwin (University of Michigan)
A. Fleischman (Case Western Reserve University)
M. Grabiner (University of Illinois)
S. Halliburton (Vanderbilt University)
G. Lockwood (University of Toronto, Canada)
C. McDevitt (University of London, U.K.)
S. Roy (Case Western Reserve University)
R. Shekhar (Ohio State University)
W. Smith (Cleveland State University)
A. van den Bogert (University of Utrecht, The Netherlands)
I. Vesely (University of Western Ontario, Canada)
G. Yue (University of Iowa)

Fenn College has more than 75 years of experience in providing outstanding engineering education.

Graduate Studies in Chemical and Applied Biomedical Engineering at Cleveland State University's (CSU's) Fenn College of Engineering offers a wealth of opportunity in a stimulating environment.

Research opportunities are available in collaboration with the Biomedical Engineering Department of the renowned Cleveland Clinic Foundation (CCF), Cleveland's Advanced Manufacturing Center, local and national industry, and Federal agencies, to name a few. Assistantships and Tuition Fee Waivers are available on a competitive basis for qualified students.

Cleveland State University has 16,000 students enrolled in its academic programs. It is located in the center of the city of Cleveland, with many outstanding cultural and recreational opportunities nearby.

RESEARCH AREAS

Adsorption Processes
Agile Manufacturing
Artificial Heart Valves
Biomechanics
Bioreactor Design
Bioseparations
Blood Flow
Combustion
Computational Fluid Dynamics
Drug Delivery Systems
Environmental Pollution Control
Materials Synthesis and Processing
Medical Imaging
MEMS Technology
Orthopedic Devices
Process Modeling and Control
Reaction Engineering
Statistical Mechanics
Surface Phenomena and Mass Transfer
Thermodynamics and Fluid Phase Equilibrium
Tissue Engineering
Tribology
Ventricular Assist Devices
Zeolites: Synthesis, Adsorption, and Diffusion

For more information, write to:

Graduate Program Coordinator • Department of Chemical Engineering
Cleveland State University • Cleveland, OH 44115

Telephone: 216-687-2569 • E-mail: ChE@csvax.egr.csuohio.edu
http://www.csuohio.edu/chemical_engineering/

Assistantships and Tuition/Fee Waivers are available on a competitive basis for qualified students.

University of Colorado at Boulder

The Boulder campus has a controlled enrollment of about 22,000 undergraduates and 5,000 graduate students. The beautiful campus has 200 buildings of rough-cut sandstone with red-tile roofs. The excellent educational opportunities and beautiful location attract outstanding students from every part of the United States and 85 countries.

The University of Colorado has its main campus located in Boulder, an attractive community of 90,000 people located at the base of the Rocky Mountains. Boulder has over 300 days of sunshine per year, with relatively mild and dry seasons. The city is an active and innovative town that provides a rich array of recreational and cultural activities.

Department of Chemical Engineering Faculty and Research Interests

Kristi S. Anseth
Polymers, Biomaterials, Tissue Engineering

Christopher N. Bowman
Polymers, Membrane Materials

David E. Clough
Process Control, Applied Statistics

Robert H. Davis
Fluid Mechanics, Biotechnology, Membranes

John L. Falconer
Catalysis, Zeolite Membranes

R. Igor Gamow
Biophysics, High Altitude Physiology, Human Performance, Diving Physiology

Steven M. George
Surface Chemistry, Thin Films, Nanoengineering

Doug Gin
Polymers

Ryan Gill
Biotechnology

Christine M. Hrenya
Fluidization, Granular Systems, Fluid Mechanics

Dhinakar S. Kompala
Biotechnology, Animal Cell Cultures, Metabolic Engineering

J. Will Medlin
Heterogeneous Catalysis, Solid-State Sensors, Computational Chemistry

Richard D. Noble
Membranes, Separations

W. Fred Ramirez
Process Control, Biotechnology

Theodore W. Randolph
Biotechnology, Supercritical Fluids

Robert L. Sani
Transport Phenomena, Applied Mathematics

Daniel K. Schwartz
Interfacial and Colloid Science

Alan W. Weimer
Ceramics, Energy, Reaction Engineering

Graduate students may participate in the interdisciplinary Biotechnology Training Program and the interdisciplinary NSF Industry/University Cooperative Research Center for Membrane Applied Science and Technology and the Center for Fundamentals and Applications of Photopolymerizations.

For information and application
Graduate Admissions Committee • Department of Chemical Engineering
University of Colorado • Boulder, CO 80309-0424
Phone (303) 492-7471 • Fax (303) 492-4341 • E-mail • chemeng@spot.colorado.edu
http://www.Colorado.EDU/che/

Colorado School of Mines

Faculty

- R.M. Baldwin (CSM, 1975)
- A.L. Bunge (Berkeley, 1982)
- A.M. Dean (Harvard, 1971)
- J.R. Dorgan (Berkeley, 1991)
- J.F. Ely (Indiana, 1971)
- D.W.M. Marr (Stanford, 1993)
- C. McCabe (Sheffield, 1998)
- J.T. McKinnon (MIT, 1989)
- R.L. Miller (CSM, 1982)
- E.D. Sloan (Clemson, 1974)
- J.D. Way (Colorado, 1986)
- C.A. Wolden (MIT, 1995)
- D.T. Wu (Berkeley, 1991)

Visit

http://www.mines.edu

Evolving from its origins as a school of mining founded in 1873, CSM is a unique, highly-focused University dedicated to scholarship and research in materials, energy, and the environment.

The Chemical Engineering Department at CSM maintains a high quality, active, and well-funded graduate research program. According to the NSF annual survey of research expenditures, our department has placed in the top 25 nationally each of the last 5 years. Research areas within the department include:

Materials Science and Engineering
Organic and inorganic membranes (Way, Baldwin)
Polymeric materials (Dorgan, McCabe, Wu)
Colloids and complex fluids (Marr, Wu)
Electronic materials (Wolden)
Fuel cell membranes (Way)

Theoretical and Applied Thermodynamics
Natural gas hydrates (Sloan)
Molecular simulation and modelling (Ely, McCabe)

Transport Properties and Processes
Dermal absorption (Bunge)
Microfluidics (Marr)

Space and Microgravity Research
Membranes on Mars (Way, Baldwin)
Water mist flame suppression (McKinnon)

Reacting Flows
Flame kinetics (McKinnon, Dean)
Reaction mechanisms (Dean, McKinnon)
High-T fuel cell kinetics (Dean)

Finally, located at the foot of the Rocky Mountains and only 15 miles from downtown Denver, Golden enjoys over 300 days of sunshine per year. These factors combine to provide year-round cultural, recreational, and entertainment opportunities virtually unmatched anywhere in the United States.

Colorado State University

CSU is located in Fort Collins, a pleasant community of 100,000 people with the spirit of the West, the vitality of a growing metropolitan area, and the friendliness of a small town. Fort Collins is located about 65 miles north of Denver and is adjacent to the foothills of the Rocky Mountains. The climate is excellent, with 300 sunny days per year, mild temperatures, and low humidity. Opportunities for hiking, biking, camping, boating, fishing, and skiing abound in the immediate and nearby areas. The campus is within easy walking or biking distance of the town's shopping areas and its Center for the Performing Arts.

M.S. and Ph.D. programs in chemical engineering

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- Advanced Process Control
- Biochemical Engineering
- Biomedical Engineering
- Chemical Thermodynamics
- Chemical Vapor Deposition
- Computational Fluid Dynamics
- Environmental Biotechnology
- Environmental Engineering
- Magnetic Resonance Imaging
- Membrane Separations
- Metabolic Engineering
- Polymeric Materials
- Porous Media Phenomena
- Thin Films
- Tissue Engineering

FINANCIAL AID AVAILABLE

Teaching and research assistantships paying a monthly stipend plus tuition reimbursement.

For applications and further information, write

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Colorado State University
Fort Collins, CO 80523-1370

FACULTY

Brian C. Batt, Ph.D.
University of Colorado

Laurence A. Belfiore, Ph.D.
University of Wisconsin

David S. Dandy, Ph.D.
California Institute of Technology

M. Nazmul Karim, Ph.D.
University of Manchester

James C. Linden, Ph.D.
Iowa State University

Vincent G. Murphy, Ph.D.
University of Massachusetts

Kenneth F. Reardon, Ph.D.
California Institute of Technology

Kristina D. Rinker, Ph.D.
North Carolina State University

A. Ted Watson, Ph.D.
California Institute of Technology

Ranil Wickramasinghe, Ph.D.
University of Minnesota

University of Connecticut

Chemical Engineering Department

Graduate Study in Chemical Engineering

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cheginfo@engr.uconn.edu

❑ Biochemical Engineering and Biotechnology

James D. Bryers, Ph.D., Rice University (Joint Appointment)
Biochemical Engineering, Biofilm Processes, Biomaterials

Robert W. Coughlin, Ph.D., Cornell University
Biotechnology, Biochemical and Environmental Engineering Catalysis, Kinetics, Separations, Surface Science

Ranjan Srivastava, Ph.D., University of Maryland
Experimental and Computational Biology, Biomolecular Network Analysis, Stochastic Biological Phenomena, Evolutionary Kinetics

Thomas K. Wood, Ph.D., North Carolina State University
Microbiological Engineering, Bioremediation with Genetically-Engineered Bacteria, Enzymatic Green Chemistry, Biochemical Engineering, Biocorrosion

❑ Polymer Science

Patrick T. Mather, Ph.D., University of California, Santa Barbara
Polymers, Microstructure and Rheology, Liquid Crystalinity, Inorganic-Organic Hybrids

Richard Parnas, Ph.D., University of California, Los Angeles
Composites, Biomaterials

Montgomery T. Shaw, Ph.D., Princeton University
Polymer Rheology and Processing, Polymer-Solution Thermodynamics

Robert A. Weiss, Ph.D., University of Massachusetts
Polymer Structure-Property Relationships, Ion-Containing and Liquid Crystal Polymers, Polymer Blends

Lei Zhu, Ph.D., University of Akron
Polymer Phase Transitions, Structures of Morphologies of Block Copolymers, Polymeric Nanocomposites, Biodegrabable Block Copolymers for Drug Delivery

❑ Computer Aided Modeling

Luke E.K. Achenie, Ph.D., Carnegie Mellon University
Modeling and Optimization, Molecular Design, Artificial Intelligence, Flexibility Analysis

Thomas F. Anderson, Ph.D., Univesity of California at Berkeley
Modeling of Separation Processes, Fluid-Phase Equilibria

Douglas J. Cooper, Ph.D., University of Colorado
Process Modeling, Monitoring and Control

Michael B. Cutlip, Ph.D., University of Colorado
Kinetics and Catalysis, Electrochemical Reaction Engineering, Numerical Methods

Suzanne Schadel Fenton, Ph.D., University of Illinois, Urbana-Champaign
Computational Fluid Dynamics, Turbulence, Two-Phase Flow

❑ Environmental and Energy Engineering

Can Erkey, Ph.D., Texas A&M University
Supercritical Fluids, Catalysis, Nanotechnology

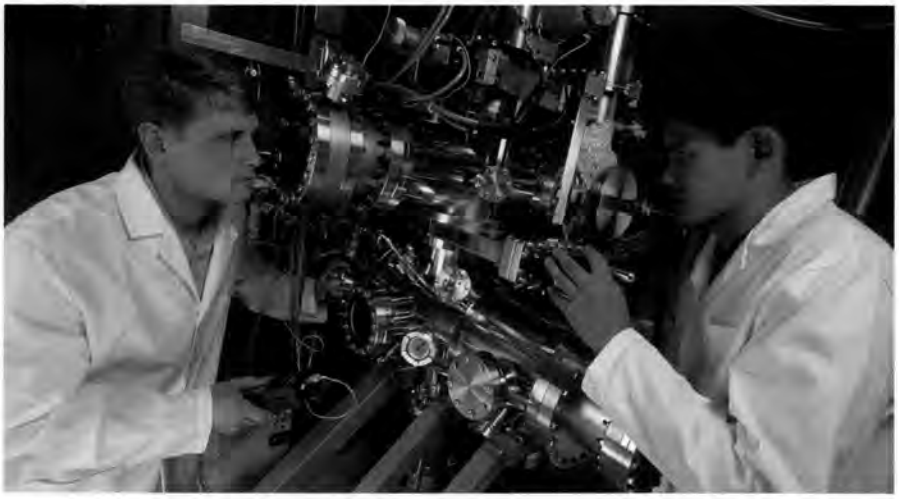
James M. Fenton, Ph.D., University of Illinois, Urbana-Champaign
Electrochemical and Environmental Engineering, Mass Transfer Processes, Electronic Materials, Energy Systems, Fuel Cells

Joseph J. Helble, Ph.D., Massachusetts Institute of Technology
Air Pollution, Aerosol Science, Nanoscale Materials Sythesis and Characterization, Combustion

Emeritus Professors
C.O. Bennett, J.P. Bell, A.T. DiBenedetto, G.M. Howard, H.E. Klei, D.W. Sundstrom

CORNELL
UNIVERSITY

Chemical and Biomolecular Engineering



At Cornell University, graduate students in chemical engineering have the flexibility to design research programs that take full advantage of Cornell's unique interdisciplinary environment and enable them to pursue individualized plans of study.

Cornell graduate programs may draw upon the resources of many excellent departments and research centers such as the Biotechnology Center, the Cornell Center for Materials Research, the Cornell Nanofabrication Facility, the Cornell Supercomputing Facility, and the Nanobiotechnology Center .

Degrees granted include Master of Engineering, Master of Science, and Doctor of Philosophy. All Ph.D. students are fully funded with tuition coverage and attractive stipends.

Distinguished Faculty

A. Brad Anton
Lynden A. Archer
Paulette Clancy
Claude Cohen
Lance Collins
T. Michael Duncan
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Paul H. Steen
Larry Walker
Ulrich Wiesner

[†] *member, National Academy of Engineering*
[‡] *member, American Academy of Arts & Science*

Research Areas

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- Biochemical and Biomedical Engineering
- Fluid Dynamics, Stability, and Rheology
- Molecular Thermodynamics and Computer Simulation
- Polymer Science and Engineering
- Reaction Engineering: Surface Science, Kinetics, and Reactor Design

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Faculty & Research Areas

Ian Baker (Oxford) ▶ Structure/property relationships of materials, electron microscopy

John Collier (Dartmouth) ▶ Orthopaedic prostheses, implant/host interfaces

Alvin Converse (Delaware) ▶ Kinetics & reactor design, enzymatic hydrolysis of cellulose

Benoit Cushman-Roisin (Florida State) ▶ Numerical modeling of environmental fluid dynamics

Harold Frost (Harvard) ▶ Microstructural evolution, deformation, and fracture of materials

Tillman Gerngross (Technical University of Vienna) ▶ Engineering of glycoproteins, fermentation technology

Ursula Gibson (Cornell) ▶ Thin film deposition, optical materials

Francis Kennedy (RPI) ▶ Tribology, surface mechanics

Daniel R. Lynch (Princeton) ▶ Computational methods, oceanography, and water resources

Lee Lynd (Dartmouth) ▶ Biomass processing, pathway engineering, reactor & process design

Victor Petrenko (USSR Academy of Science) ▶ Physical chemistry of ice

Horst Richter (Stuttgart) ▶ Thermodynamics, multiphase flow, energy conversion, process design

Erland Schulson (British Columbia) ▶ Physical metallurgy of metals and alloys

Charles E. Wyman (Princeton) ▶ Biomass pretreatment & hydrolysis, cellulase synthesis & kinetics, process design

For further information, please contact:

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University of Delaware

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Faculty

Mark A. Barteau - (Robert L. Pigford Professor; Chair) Surface Chemistry, Catalysis, Kinetics, Spectroscopy, Scanning Probe Microscopies, Materials

Antony N. Beris - Fluid Mechanics, Viscoelasticity, Nonequilibrium Thermodynamics, Numerical Methods, Parallel Computing

Douglas J. Buttrey - Oxides, Thermodynamics, Crystal Growth, Structure, Catalysis, Superconductors

Jingguang G. Chen - (Materials Science and Engineering; Director, Center for Catalytic Science and Technology) Nanoscale Microelectronic Devices, Catalytic Materials, Environmental Catalysis

Costel D. Denson - Materials, Polymers, Composites, Transport Separations

Prasad S. Dhurjati - Biotechnology, Bioreactors, Modeling, Bioinformatics, Fault Diagnosis, Expert Systems

Jeremy S. Edwards - Quantitative Analysis of Metabolism and Cellular Fate Processes; Bioinformatics and Genomics; Biotechnology and Metabolic Engineering

Eric M. Furst - Microrheology of Complex Fluids, Cellular Mechanics and Movement, Structure and Dynamics of Colloidal Crystals, Interfacial Phenomena

Eric W. Kaler - (Elizabeth Inez Kelley Professor; Dean, College of Engineering) Colloids, Surfactants, Polymers, Thermodynamics, Biomolecules

Jochen A. Lauterbach - combinatorial catalysis and high-throughput screening, fabrication of conducting polymer nanofilms, non-linear phenomena in heterogeneous catalysis, spectral imaging of diffusion processes in polymers.

Abraham M. Lenhoff - Protein Biophysics, Separations, Colloids, Thermodynamics and Transport

Raul F. Lobo - Adsorption, Catalysis, Zeolites, Microporous Materials, Inorganic Materials Synthesis

Babatunde A. Ogunnaike - Process Control, Modeling and Simulation, Systems Biology, Applied Statistics

Christopher J. Roberts - Kinetics and Statistical Thermodynamics of Liquids, Amorphous Solids (Glasses), Proteins; Kinetics and Thermodynamics of Protein Degradation; Prediction of Physical and Chemical Stability of Proteins

Anne S. Robinson – Biochemical Engineering, Biomolecule Interactions, Bioreactor Control, Molecular Engineering, Cellular Engineering

T.W. Fraser Russell - (Allan P. Colburn Professor of Chemical Engineering; Vice Provost for Research) Photovoltaics, Multiphase Fluid Mechanics

Stanley I. Sandler - (Henry Belin duPont Chair; Director, Center for Molecular and Engineering Thermodynamics) Thermodynamics, Statistical Mechanics, Computational Chemistry, Environment, Separations, Bioseparations

Annette D. Shine - Electrorheology, Polymer Processing, Rheology, Supercritical Fluids

Dionisios G. Vlachos - Surface Chemistry, Combustion, Pollution Abatement, Reactor Design; Nucleation and Growth of Nanophase Materials and Membranes; Numerical Methods, Bifurcation Theory, Patterning of Materials

Norman J. Wagner - Colloid and Polymer Science, Rheology, Statistical Mechanics of Complex Fluids, Thermodynamics, Biopolymers

Brian G. Willis - Chemical-Physical Mechanisms of Copper Metalization and Semiconductor Interconnect Materials, Computational Chemistry Models of CVD Growth Mechanisms, Materials Processing research of Compound Semiconductor Materials for System on a Chip Integration.

Richard P. Wool - Polymers, Composites, Adhesion, Interfaces, Materials from Renewable Resources, Biodegradable Plastics

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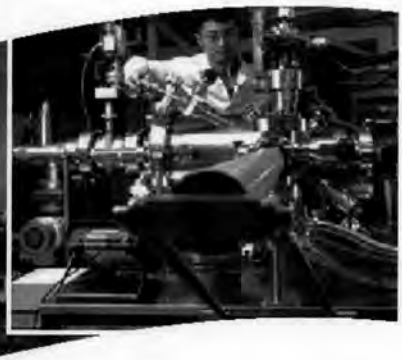

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Chemical reactions; Transport; Mathematical modeling

V. BALAKOTAIAH
Chemical reaction engineering; Applied mathematics

A. T. CAPITANO
Tissue Engineering; In Vitro Toxicology

V. M. DONNELLY
Plasma Processing; Electronic Materials

M. J. ECONOMIDES
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E. J. HENLEY (EMERITUS)
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R. KRISHNAMOORTI
Polymeric materials; Biomaterials

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K. K. MOHANTY
Fluid flow in porous media; Biomaterials

M. NIKOLAOU
Computer-aided process engineering

J. T. RICHARDSON
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PhD, University of California, Santa Barbara
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Joseph N. Cannon, Professor • PhD, University of Colorado
Transport phenomena in environmental systems • computational fluid mechanics • heat transfer

Ramesh C. Chawla, Professor • PhD, Wayne State University
Mass transfer and kinetics in environmental systems• bioremediation • incineration • air and water pollution control

William E. Collins, Associate Professor • PhD, University of Wisconsin-Madison
Polymer deformation, rheology, and surface science • biomaterials • bioseparations • materials science

M. Gopala Rao, Professor • PhD, University of Washington, Seattle
Adsorption and ion exchange • process energy systems • radioactive waste management • remediation of contaminated soils and groundwater

John P. Tharakan, AssociateProfessor • PhD University of California, San Diego
Bioprocess engineering • protein separations • biological hazardous waste treatment • bio-environmental engineering

Robert J. Lutz, Visiting Professor • PhD, University of Pennsylvania
Biomedical engineering • hemodynamics • drug delivery • pharmacokinetics

Herbert M. Katz, Professor Emeritus • PhD, University of Cincinnati
Environmental engineering

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Paul R. Anderson; *precipitation kinetics, evaluation of oxide adsorbents for water and wastewater treatment*

Hamid Arastoopour; *computational multiphase flow, fluidization, material processing, particle technology, fluid-particle flow*

Barry Bernstein; *computational fluid mechanics, material properties, polymer rheology*

Donald J. Chmielewski; *process control, pollution prevention*

Ali Cinar; *chemical and food process control, nonlinear input-output modeling, statistical process monitoring*

Dimitri Gidaspow; *hydrodynamics of fluidization using kinetic theory, gas-solid transport*

Henry R. Linden; *fossil fuel technologies, energy and resource economics, energy and environmental policy*

Demetrios J. Moschandreas; *ambient and indoor air pollution, statistical analysis, environmental impact assessment*

Allan S. Myerson; *crystallization from solution, nucleation, molecular modeling*

Kenneth E. Noll; *air resources engineering, air pollution meteorology, hazardous waste treatment*

Krishna R. Pagilla; *water and wastewater engineering, environmental microbiology, soil remediation, sludge treatment*

Satish Parulekar; *biochemical engineering, chemical reaction engineering*

Victor H. Pérez-Luna; *biomedical and tissue engineering*

Jai Prakash; *solid state chemistry, materials synthesis and characterization for energy conversion and storage applications*

Jay D. Schieber; *kinetic theory, polymer rheology predictions, transport phenomena, non-Newtonian fluid mechanics*

J. Robert Selman; *applied electrochemistry and electrochemical engineering, battery and fuel cell design*

Eugene S. Smotkin; *FTIR spectroscopy of electrode surfaces, electrochemical mass spectroscopy, fuel cells, combinatorial catalyst screening*

Fouad A. Teymour; *polymer reaction engineering, mathematical modeling, nonlinear dynamics*

David C. Venerus; *polymer rheology and processing, transport phenomena in polymeric systems*

Darsh T. Wasan; *thin liquid films; interfacial rheology; foams, emulsion and dispersion, environmental technologies*

Research Faculty and Lecturers

Said Al-Hallaj ◆ Michael Caracotsios ◆ Ellis Fields ◆ William Franek
Ted Knowlton ◆ Harold Lindahl ◆ Robert Lyczkowski ◆ Zoltan Nagy
Alex Nikolov ◆ Ali Oskouie ◆ Giselle Sandi ◆ Charles Sizer ◆ Hwa-Chi Wang

Graduate program for M.S. and Ph.D. degrees in Chemical and Biochemical Engineering

FACULTY

Gary A. Aurand
North Carolina State U. 1996
Supercritical fluids/ High pressure biochemical reactors

Audrey Butler
U. of Iowa 1989
Chemical precipitation processes

Greg Carmichael
U. of Kentucky 1979
Global change/ Supercomputing/ Air pollution modeling

Vicki H. Grassian
U. of California-Berkeley 1987
Surface chemistry/ Heterogeneous processes

C. Allan Guymon
U. of Colorado 1997
Polymer reaction engineering/UV curable coatings/ Polymer liquid crystal composites

Stephen K. Hunter
U. of Utah 1989
Bioartificial organs/ Microencapsulation technologies

Julie L.P. Jessop
Michigan State U. 1999
Polymers/ Microlithography/ Spectroscopy

Robert Linhardt
Johns Hopkins 1979
Biopolymers and pharmaceutical applications

David Murhammer
U. of Houston 1989
Insect cell culture/ Bioreactor monitoring

Tonya L. Peeples
Johns Hopkins 1994
Bioremediation/ Extremophile physiology and biocatalysis

David Rethwisch
U. of Wisconsin 1985
Membrane science/ Polymer science/ Catalysis

V.G.J. Rodgers
Washington U. 1989
Transport phenomena in bioseparations/ Membrane separations

Alec B. Scranton
Purdue U. 1990
Photopolymerization/ Reversible emulsifiers/ Polymerization kinetics

Ramaswamy Subramanian
Indian Institute of Science 1992
Structural enzymology/Structure function relationship in proteins

John M. Wiencek
Case Western Reserve 1989
Protein crystallization/ Surfactant technology

Iowa

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Kansas State

Kurt R. Hebert
Illinois

Peter J. Reilly
Pennsylvania

Glenn L. Schrader
Wisconsin

	Catalysis and Reaction Engineering	Biochemical and Metabolic Engineering and Bioinformatics	Biomaterials and Biomedical Engineering	Biobased Products	Advanced Polymeric and Nanostructured Materials	Process Design and Control	Transport and Thermodynamics
Brown, Robert C.				●			
Doraiswamy, L.K.	●						
Fox, Rodney O.	●						●
Glatz, Charles E.		●		●			
Gonzalez, Ramon		●		●			
Hebert, Kurt R.					●		
Hill, James C.							●
Jolls, Kenneth R.							●
Mallapragada, Surya K.			●	●	●		
Narasimhan, Balaji			●	●	●		
Reilly, Peter J.		●		●			
Rollins, Derrick K.						●	
Schrader, Glenn L.	●			●			
Seagrave, Richard C.		●	●				
Shanks, Brent H.	●			●	●		
Shanks, Jacqueline V.		●		●			
Ulrichson, Dean L.						●	
Vigil, R. Dennis	●						●
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Recombinant DNA Technology
Protein Folding and Aggregation
Michael J. Betenbaugh, PhD • University of Delaware

Equations of State • Statistical Thermodynamics
Solvent Replacement
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John C. Davis *(Ph.D., Wyoming)*
Don W. Green, *(Ph.D., Oklahoma)*
Colin S. Howat *(Ph.D., Kansas)*
Carl E. Locke, Jr., *(Ph.D., Texas)*
Trung V. Nguyen *(Ph.D., Texas A&M)*
Karen J. Nordheden *(Ph.D., Illinois)*
Russell D. Osterman *(Ph.D., Kansas)*
Marylee Z. Southard *(Ph.D., Kansas)*
Susan M. Williams *(Ph.D., Oklahoma)*
Bala Subramaniam, Chair *(Ph.D., Notre Dame)*
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Department of Chemical & Materials Engineering

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- Biopharmaceutical & Biocellular Engineering
- Materials Synthesis
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- Membranes & Polymers
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The Chemical Engineering Faculty

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K. Anderson • *Carnegie-Mellon University*
D. Bhattacharyya • *Illinois Institute of Technology*
A. Geertsema • *University of Karlsruhe*
E. Grulke • *Ohio State University*
C. Hamrin (Professor Emeritus) • *Northwestern University*
D. Kalika • *University of California, Berkeley*
M. Keane • *National University of Ireland*
R. Kermode • *Northwestern University*
B. Knutson • *Georgia Institute of Technology*
S. Rankin • *University of Minnesota*
A. Ray • *Clarkson University*
J.T. Schrodt • *University of Louisville*
T. Tsang • *University of Texas*

Paducah, KY, Program

P. Dunbar • *University of Tennessee*
R. Lee-Desautels • *Ohio State University*
D. Silverstein • *Vanderbilt University*
J. Smart • *University of Texas*

For more information:

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Director of Graduate Studies, Chemical Engineering
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CHEMICAL ENGINEERING

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Faculté DES SCIENCES ET DE GÉNIE

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Research Areas

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- polymer blends and processing
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- biochemical engineering
- animal cell culture
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- intermolecular and intersurface forces
- complex fluid systems, polymers, biomaterials
- nanorheology, nanotribology

Bernard Grandjean
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- catalytic membrane reactors
- neural network, genetic algorithm
- process modelling

Serge Kaliaguine
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- catalytic membranes and fuel cells
- industrial catalysis

René Lacroix
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- numerical simulation of cooling processes
- thermo-electrical simulation

Faïçal Larachi
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(418) 656-3566
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- wet oxidation
- flow instrumentation

Anh LeDuy
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- biokinetics

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- rheology
- polymeric foams

Christian Roy
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- industrial process engineering

Additional information and Applications may be obtained from :
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Pavillon Adrien-Pouliot, Université Laval
Québec (QC) Canada G1K 7P4
alain.garnier@gch.ulaval.ca
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Philip A. Blythe (University of Manchester) ■ fluid mechanics • heat transfer • applied mathematics
Hugo S. Caram (University of Minnesota) ■ gas-solid and gas-liquid systems • optical techniques • reaction engineering
Marvin Charles (Polytechnic Institute of Brooklyn) ■ bioprocess design • cGMP R&D
Manoj K. Chaudhury (SUNY-Buffalo) ■ adhesion • thin films • surface chemistry
John C. Chen (University of Michigan) ■ two-phase vapor-liquid flow • fluidization • radiative heat transfer • environmental technology
Mohamed S. El-Aasser (McGill University) ■ polymer colloids and films • emulsion copolymerization • polymer synthesis and characterization
James T. Hsu (Northwestern University) ■ bioseparations • applied recombinant DNA technology
Andrew Klein (North Carolina State University) ■ emulsion polymerization • colloidal and surface effects in polymerization
Mayuresh V. Kothare (California Institute of Technology) ■ model predictive control • constrained control • microchemical systems
William L. Luyben (University of Delaware) ■ process design and control • distillation
William E. Schiesser (Princeton University) ■ numerical algorithms and software in chemical engineering
Arup K. Sengupta (University of Houston) ■ use of adsorbents, ion exchange, reactive polymers, membranes in environmental pollution
Cesar A. Silebi (Lehigh University) ■ separation of colloidal particles • electrophoresis • mass transfer
Leslie H. Sperling (Duke University) ■ mechanical and morphological properties of polymers • interpenetrating polymer networks
Fred P. Stein, Emeritus (University of Michigan) ■ thermodynamic properties of mixtures
Harvey G. Stenger, Jr. (Massachusetts Institute of Technology) ■ reactor engineering
Israel E. Wachs (Stanford University) ■ materials characterization • surface chemistry • heterogeneous catalysis • environmental catalysis
Leonard A. Wenzel, Emeritus (University of Michigan) ■ thermodynamics • cryogenics and mixed-gas adsorption

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Additional information and applications may be obtained by writing to:

Dr. James T. Hsu, Chairman • Graduate Committee
Department of Chemical Engineering • Lehigh University • 111 Research Drive • Iacocca Hall • Bethlehem, PA 18015
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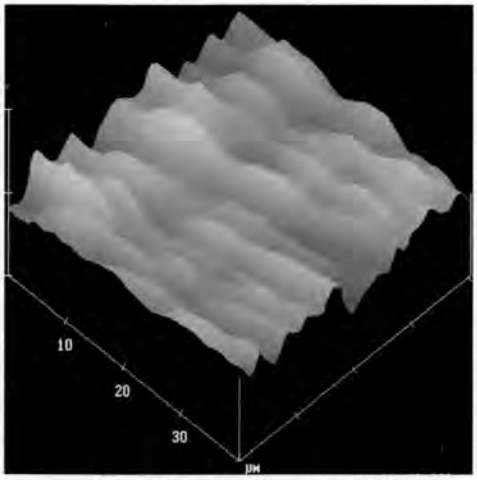

Atomic Force Microscopy of Deformed High Density Polyetheylene

Faculty

C.S. Fang, PhD, University of Houston, TX (1968)

F.F. Farshad, PhD, University of Oklahoma, OK (1975)

J.D. Garber (Head), PhD, Georgia Institute of Technology, GA (1971)

A.G. Hill, PhD, Louisiana Technical University, LA (1980)

J.N. Linsley, PhD, Rice University, TX (1970)

R.D.K. Misra, PhD, University of Cambridge, UK (1984)

A.B. Ponter, DSc, Birmingham University, UK (1986) PhD, Manchester (1966)

J.R. Reinhardt, PhD, University of Arkansas, AR (1977)

Research Centers

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  - Deformation Behavior of Polymers and Composites
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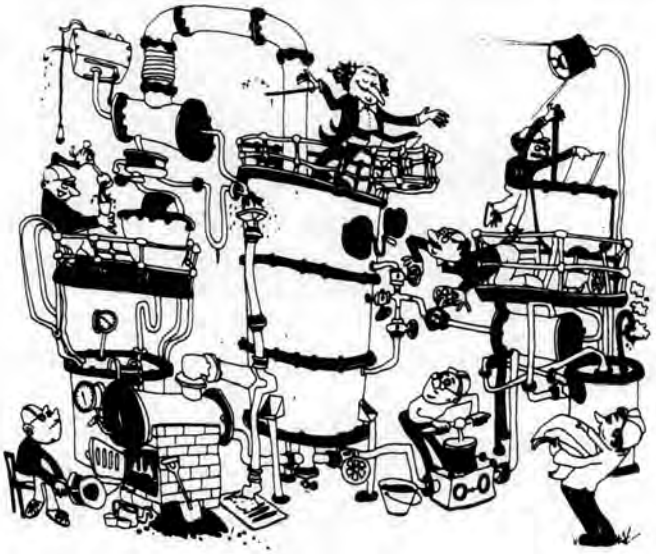

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Polymeric Materials, Science and Engineering

A.B. CORRIPIO (Ph.D., Louisiana State University)
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Supercritical Fluid Extraction, Ultrafast Kinetics

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Mikhail A. Anisimov (Moscow) • *Critical phenomena and phase transitions in fluids and fluid mixtures*
Timothy A. Barbari (Texas-Austin) • *Membrane science, polymer science, biomaterials*
William E. Bentley (Colorado) • *Biochemical/metabolic engineering, applications of molecular biology*
Richard V. Calabrese (Massachusetts) • *Multiphase flow, turbulence and mixing*
Kyu Yong Choi (Wisconsin) • *Polymer reaction engineering*
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For Engineering and Science Majors

EMPHASIS

The Department of Chemical and Biochemical Engineering at UMBC offers graduate programs leading to M.S. and Ph.D. degrees in Chemical Engineering. Our research is heavily focused in biochemical, biomedical, and bioprocess engineering and covers a wide range of areas including fermentation, cell culture, downstream processing, drug delivery, protein engineering, and bio-optics. Unique programs in the regulatory-engineering interface of bioprocessing are offered as well.

FACILITIES

The Department offers state-of-the-art facilities for faculty and graduate student research. These modern facilities have been developed primarily in the last six years and comprise 6,000 square feet of laboratory space in the Technology Research Center plus 7,000 square feet of departmental laboratories in the new Engineering and Computer Science building.

LOCATION

UMBC is located in the Baltimore-Washington corridor and within easy access to both metropolitan areas. A number of government research facilities such as NIH, FDA, USDA, NSA, and a large number of biotechnology companies are located nearby and provide excellent opportunities for research interactions.

FOR FURTHER INFORMATION CONTACT:

Graduate Program Coordinator
Department of Chemical and Biochemical Engineering
University of Maryland Baltimore County
1000 Hilltop Circle
Baltimore, Maryland 21250
Phone: (410) 455-3400
FAX: (410) 455-1049

FACULTY

D. D. FREY, Ph.D. *California-Berkeley*
Separation and transport processes in biotechnology; protein purification; chromatography.

T. GOOD, Ph.D. *University of Wisconsin-Madison*
Cellular Engineering; Protein Aggregation: In Vitro Models of Disease

M. R. MARTEN, Ph.D. *Purdue*
Bioprocess engineering; Fermentation; Cell biology and protein secretion; Proteomics

A. R. MOREIRA, Ph.D. *Pennsylvania*
rDNA fermentation; Regulatory issues; Scale-up; Downstream processing

G. F. PAYNE, Ph.D.* *Michigan*
Plant cell tissue culture; *Streptomyces* bioprocessing; Adsorptive separation; Toxic waste treatment

G. RAO, Ph.D. *Drexel*
Fluorescence-based sensors and instrumentation; Fermentation and cell culture.

J. M. ROSS, Ph.D. *Rice*
Cellular and biomedical engineering; Cell adhesion; Tissue engineering

* *Joint appointment with the University of Maryland Biotechnology Institute*

Come to Chemical Engineering at the University of Massachusetts Amherst

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Faculty

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S.R. Bhatia *(Princeton)*
W.C. Conner, Jr. *(Johns Hopkins)*
J.M. Douglas, Emeritus *(Delaware)*
N.S. Forbes *(Berkeley)*
V. Haensel, Emeritus *(Northwestern)*
M.A. Henson *(UC Santa Barbara)*
R.L. Laurence, Emeritus *(Northwestern)*
E. Kokkoli *(Illinois-Urbana)*
D. Maroudas *(MIT)*
P.A. Monson *(London)*
S.C. Roberts *(Cornell)*
J.D. Sherman *(MIT)*
M. Tsapatsis *(Caltech)*
J.J. Watkins *(Massachusetts)*
P.R. Westmoreland *(MIT)*
H.H. Winter *(Stuttgart)*

Current Areas of MS and PhD Research

- Process design:
  Methods, distillation, process control
- Materials:
  Polymers and inorganics, multiscale modeling
- Kinetics and reaction engineering:
  Catalytic, biological, noncatalytic
- Molecularly based modeling:
  Statistical mechanics, quantum chemistry, molecular simulations
- Fluid mechanics and polymer rheology
- Bioengineering and biomaterials
- Supercritical fluid processing

For application forms and further information on fellowships and assistantships, academic and research programs, and student housing, see:

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or write:

Graduate Program Director
Department of Chemical Engineering
159 Goessmann Laboratory, 686 N. Pleasant St.
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Chemical Engineering
at

MIT

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Biotechnology • Catalysis and Chemical Kinetics
Colloid Science and Separations
Energy Engineering • Environmental Engineering
Materials • Microchemical Systems, Microfluidics • Nanotechnology
Polymers • Process Systems Engineering
Thermodynamics, Statistical Mechanics, and Molecular Simulation
Transport Processes

With the largest research faculty in the country, the Department of Chemical Engineering at MIT offers programs of research and teaching which span the breadth of chemical engineering with unprecedented depth in fundamentals and applications. The Department offers graduate programs leading to the master's and doctor's degrees. Graduate students may also earn a professional master's degree through the ***David H. Koch School of Chemical Engineering Practice****, a unique internship program that stresses defining and solving industrial problems by applying chemical engineering fundamentals. In collaboration with the Sloan School of Management, the Department also offers a doctoral program in Chemical Engineering Practice, which integrates chemical engineering, research, and management.*

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P.S. Doyle	**G.J. McRae**	**J.Y. Ying**

For more information, contact

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McMaster University

Chemical Engineering

Faculty

M.H.I. Baird *Emeritus* • PhD (Cambridge) • Mass Transfer • Solvent Extraction

J.L. Brash *Emeritus* • PhD (Glasgow) • Biomedical Engineering • Bio Materials • Polymers

J.M. Dickson • PhD (Virginia) • Membrane Transport Phenomena • Reverse Osmosis

C. Filipe • PhD (Clemson) • Environmental Biotechnology • Environmental Engineering

R. Ghosh • DPhil (Oxford) • Bioseparation • Membrane Technology

A.E. Hamielec *Emeritus* • PhD (Toronto) • Polymer Reaction Engineering

A.N. Hrymak • PhD (Carnegie Mellon) • Computer Aided Design • Polymer Processing

J.F. MacGregor • PhD (Wisconsin) • Computer Process Control • Polymer Reaction Engineering

T.E. Marlin • PhD (Massachusetts) • Computer Process Control

R.H. Pelton • PhD (Bristol) • Water Soluble Polymers • Colloid Polymer Systems

Y. Samyudia • PhD (Queensland) • Computer Process Control

C.L.E. Swartz • PhD (Wisconsin) • Computer Process Control • Optimization

H. Sheardown • PhD (Toronto) • Biomaterials • Tissue Engineering

L.W. Shemilt *Emeritus* • PhD (Toronto) • Radioactive Waste Management

P.A. Taylor • PhD (Wales) • Computer Process Control

M. Thompson • PhD (Waterloo) • Polymer Processing • Extrusion and Reactive Extrusion

J. Vlachopoulos • DSc (Washington University) • Polymer Processing • Rheology • Numerical Methods

P.E. Wood • PhD (Caltech) • Experimental and Computational Fluid Mechanics • Heat Transfer

S. Zhu • PhD (McMaster) • Polymer Reaction Engineering • Polymer Synthesis • Polymerization Process Modeling

Adjunct Faculty

T. Kourti • PhD (McMaster) • Computer Process Control

K. Kostanski • PhD (Tech U. Szczecin) • Polymerization and Polymer Characterization

S.L. Quinn • PhD (Queens) • Statistical Process Control

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The University of Michigan

Faculty

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2. **Stacy G. Bike** Colloids, polymers, complex fluids
3. **Mark A. Burns** Microfabricated analytical systems, biochemical separations
4. **H. Scott Fogler** Fused reactions, colloids, gellation kinetics
5. **John L. Gland** Surface science
6. **Sharon Glotzer** Soft materials and complex fluids
7. **Erdogan Gulari** Catalysis, electronic materials, combinational chemistry
8. **Jennifer J. Linderman** Engineering approaches to cell biology
9. **Susan Montgomery** Undergraduate program advisor
10. **David J. Mooney** Cellular and tissue engineering
11. **Chester Ni** Bioinformatics, pharmaceutics
12. **Phillip E. Savage** Reactions in supercritical water, "green" chemistry
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14. **Christina Smolke** Biomolecular and metabolic engineering
15. **Michael Solomon** Light scattering and rheology of complex fluids
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17. **Henry Y. Wang** Pharmaceutical engineering, bioprocessing
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Michigan State University

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The Department of Chemical Engineering and Materials Science offers Graduate Programs leading to M.S. and Ph.D. degrees in Chemical Engineering and Materials Science. The faculty conduct fundamental and applied research in a variety of Chemical Engineering and Materials Science disciplines. The Michigan Biotechnology Institute, the Composite Materials and Structures Center, and the Bioprocessing Center provide a forum for interdisciplinary work in current high technology areas.

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  Biomaterials, Ceramic Bone Substitutes, Bone Tissue Engineering, Colloidal Processing of Ceramics and Ceramic Composites
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  Applied Spectroscopy, Food and Biochemical Engineering, Crystallization from Solution, New Uses of Agricultural Crops
- **T.R. BIELER** • *Ph.D., 1989, University of California*
  High Temperature Creep; Superplasticity; Texture of Metals, Intermetallics, and Composites; Solder and Electronic Heat Sink Materials; Metal Matrix Composite Fabrication; High Strain Rate Deformation
- **D.M. BRIEDIS** • *Ph.D., 1981, Iowa State University*
  Biochemical Engineering, Biobased Industrial Products, Biomass Conversion, Life Cycle Analysis
- **E.D. CASE** • *Ph.D., 1980, Iowa State University*
  Microcracking in Ceramics, Thermal Fatigue, Ceramic/Ceramic Joining, Bioceramics, Microwave Processing of Ceramics and Ceramic Composites
- **C. CHAN** • *Ph.D., 1990, University of Pennsylvania*
  Metabolism and Diabetes, Alzheimer and Parkinson's disease, Metabolic Engineering, Tissue Engineering, Bioinformatics and Multivariate Analysis
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  Transmission Electron Microscopy, Diffraction and Channeling Studies using Scanning Electron Microscopy, Deformation and Fracture, Intermetallic Alloys, Magnetic Multilayer Structures
- **L.T. DRZAL** • *Ph.D., 1974, Case Western Reserve University*
  Surface and Interfacial Phenomena, Adhesion, Polymer Composite Materials, Surface Characterization, Surface Modification of Polymers, Polymer Composite Processing, Adhesive Bonding
- **D.S. GRUMMON** • *Ph.D., 1986, University of Michigan*
  Superelasticity and Shape-Memory in Titanium-Nickel Thin Films, Microactuators, Thermoelastic Martensite Transformations, Ion Beam Surface Modification of Materials, Surface Effects in Fatigue Crack Initiation, Mechanical Metallurgy
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  Kinetics, Catalysis, Reactions in Plasmas, Polymerization Reactions, Composite Processing, Biomass Conversion, Reaction Engineering
- **K. JAYARAMAN** • *Ph.D., 1975, Princeton University*
  Polymer Rheology, Processing of Polymer Blends and Composites, Computational Methods
- **A. LEE** • *Ph.D., 1987, University of Illinois at Urbana-Champaign*
  Inorganic-Orangic Hybrid Polymers, Physical and Mechanical Characterization, Dynamics of Polymeric Glasses
- **C.T. LIRA** • *Ph.D., 1985, University of Illinois at Urbana-Champaign*
  Thermodynamics and Phase Equilibria of Complex Systems, Adsorption, Supercritical Fluid Studies
- **J.P. LUCAS** • *Ph.D., 1981, University of Minnesota*
  Microstructure Evolution/Characterization of Pb-Free Solders, Alloys, and their Composites; Nanoindentation Characterization of Deformation in Small-Volumes and Thin Films; Moisture Effects in Resin Matrix Composites; Metal Matrix Composite
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- **D.J. MILLER** • *Ph.D., 1982, University of Florida*
  Kinetics and Catalysis, Reaction Engineering, Catalytic Conversion of Biomass-Based Materials
- **R. NARAYAN** • *Ph.D., 1975, University of Bombay*
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  Electronic Materials, Scanned Probe Microscopy, Surface Characterization, Growth of Nanostructured Materials
- **R.Y. OFOLI** • *Ph.D., 1994, Carnegie Mellon University*
  Colloid and Interfacial Science: Colloid Stability, Adsorption of Proteins, Receptor-Ligand Interactions at the Liquid-Liquid Interface, Micellar Solubilization
- **C.A. PETTY** • *Ph.D., 1970, University of Florida*
  Fluid Mechanics, Turbulent Transport Phenomena, Solid-Fluid and Liquid-Liquid Separations, Hydrocyclones
- **K.N. SUBRAMANIAN** • *Ph.D., 1966, Michigan State University*
  Mechanical Properties of Metals and Ceramics, Crystallization of Glasses, Erosion, Composite Materials, Lead-Free Electronic Solders
- **R.M. WORDEN** • *Ph.D., 1986, University of Tennessee*
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C. Barry Carter
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Structural/electronic properties of complex systems

Robert F. Cook
Mechanical behavior of materials, microelectronic device fabrication and packaging

Edward L. Cussler
Mass transfer, novel separation processes

John S. Dahler (Emeritus)
Nonequilibrium statistical mechanics

Prodromos Daoutidis
Nonlinear process control, process analysis and design

H. Ted Davis
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Jeffrey J. Derby
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Lorraine Falter Francis
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William W. Gerberich
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Wei-Shou Hu
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Yianis Kaznessis
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Satish Kumar
Transport processes in complex fluids, stability, dynamics, and manipulation of interfaces, transport processes in microscale systems

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Mississippi State University
ENGINEERING

Graduate Studies in Chemical Engineering

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Rakesh K. Bajpai *Ph.D. (IIT, Kanpur)*
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Protein Crystallization • Biotechnology

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For details contact:

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Online Application: *http://www.umr.edu/~cisapps/gradappd.html*

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Professor, Ph.D. Cornell
Polymerization Reactions, Applied Rheology, Polymeric Materials

Y.T. Shah
Professor and Provost, Ph.D. MIT
Chemical Reaction and Reactor Engineering

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Bioengineering

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Delmar Timm • *Iowa State University*
Polymer Composites; Step-Wise Polymerization Kinetics; Kinetic Analysis Using GPC

Hendrik Viljoen • *University of Pretoria*
Plasma-Enhanced CVD; Detonation & Combustion; Ceramics

For further information, write

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Harold M. Anderson	• Plasma Processing, Plasma Diagnostics
C. Jeffrey Brinker	• Ceramics, Sol-Gel Processing, Self-Assembled Nanostructures
Joseph L. Cecchi	• Semiconductor Manufacturing Technology, Plasma Etching and Deposition
John G. Curro	• Polymer Theory, Computational Modeling
Abhaya K. Datye	• Catalysis, Interfaces, Advanced Materials
Julia E. Fulghum	• Surface Characterization, 3-D Materials Characterization
Sang M. Han	• Semiconductor Manufacturing Technology, Plasma Etching and Deposition
David Kauffman	• Plant Design, Environmental Engineering
Ronald E. Loehman	• Glass-Metal and Ceramic-Metal Bonding and Interfacial Reactions
Gabriel P. López	• Chemical Sensors, Hybrid Materials, Biotechnology, Interfacial Phenomena
Richard W. Mead	• Unit Operations, Resource Extraction
H. Eric Nuttall	• Environmental Science, Waste Transport Management, Colloid Science
Jonathan Phillips	• Materials Science, Catalysis, Plasma Physics and Chemistry
Timothy L. Ward	• Aerosol Materials Synthesis, Inorganic Membranes
Ebtisam S. Wilkins	• Biomedical Sensors and Waste Treatment

For more information, contact:

Jeffrey Brinker, Graduate Advisor
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PhD & MS Programs in Chemical Engineering

Faculty and Research Areas

- **Paul K. Andersen,** Associate Professor, *University of California, Berkeley*
  Transport Phenomena, Electrochemistry, Environmental Engineering
- **Ron K. Bhada,** Professor Emeritus, *University of Michigan*
- **Joe L. Creed,** Assistant Dean, *New Mexico State University*
  Engineering Design
- **Francisco R. Del Valle,** College Professor, *Massachusetts Institute of Technology*
  Food Engineering
- **Charles L. Johnson,** Professor and Head, *Washington University-St. Louis*
- **Richard L. Long,** Professor and Associate Head *Rice University*
  Transport Phenomena, Biomedical Engineering, Separations
- **Martha C. Mitchell,** Associate Professor, *University of Minnesota*
  Advanced Materials, Statistical Mechanics, Molecular Modeling
- **Stuart H. Munson-McGee,** Professor, *University of Delaware*
  Advanced Materials, Separations
- **John T. Patton,** Professor Emeritus, *Oklahoma State University*
- **David A. Rockstraw,** Associate Professor, *University of Oklahoma*
  Separations, Environmental Engineering, Kinetics
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-Electronic Materials

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-Polymer Science

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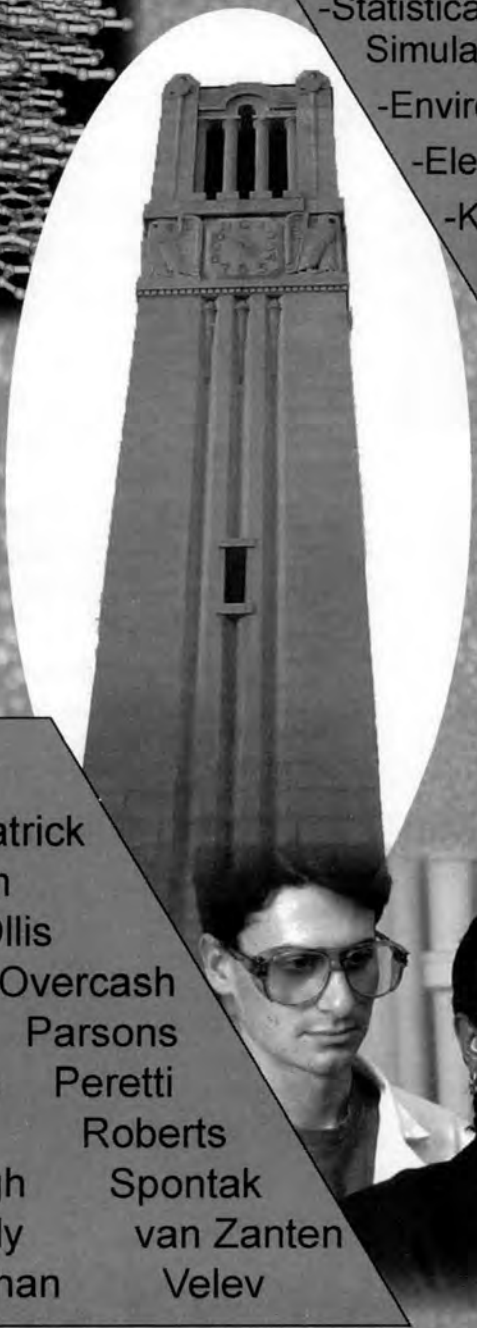

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Albert Sacco Jr.
Ronald J. Willey
Katherine S. Ziemer

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Biomedical Engineering
Catalysis
Microgravity – Advanced materials
Nanocomposite Membranes
Semiconductor Materials

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Carbon Nanotubes
Mixed-Matrix Membrane Separation
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Surface Acidity of Ti-silicas
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Thin Film Heterostructures
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Chemical Engineering at

Northwestern University

Luis A.N. Amaral, Ph.D., Boston University, 1996
Complex systems, computational physics, biological networks

Annelise E. Barron, Ph.D., Berkeley, 1995
Bioseparations, biopolymer engineering

Linda J. Broadbelt, PhD., Delaware, 1994
Reaction engineering, kinetics modeling, polymer resource recovery

Wesley R. Burghardt, Ph.D., Stanford, 1990
Polymer science, rheology

Buckley Crist, Jr., Ph.D., Duke, 1966
Polymer science, thermodynamics, mechanics

Joshua S. Dranoff, Ph.D., Princeton, 1960
Chemical reaction engineering, chromatographic separations

Kimberly A. Gray, Ph.D., Johns Hopkins, 1988
Catalysis, treatment technologies, environmental chemistry

Bartosz A. Grzybowski, Ph.D., Harvard, 2000
Complex chemical systems

Vassily Hatzimanikatis, Ph.D., Caltech, 1996
Computational biotechnology, functional genomics, bioinformatics

Harold H. Kung, Ph.D., Northwestern, 1974
Kinetics, heterogeneous catalysis

William M. Miller, Ph.D., Berkeley, 1987
Cell culture for biotechnology and medicine

Lyle F. Mockros, Ph.D., Berkeley, 1962
Biomedical engineering, fluid mechanics in biological systems

Monica Olvera de la Cruz, Ph.D., Cambridge, 1984
Statistical mechanics in polymer systems

Julio M. Ottino, Ph.D., Minnesota, 1979
Fluid mechanics, granular materials, chaos, mixing in materials processing

E. Terry Papoutsakis, Ph.D., Purdue, 1980
Biotechnology of animal and microbial cells, metabolic engineering, genomics

Bruce E. Rittmann, Ph.D., Stanford, 1979
In situ bioremediation, biofilms

Gregory Ryskin, Ph.D., Caltech, 1983
Fluid mechanics, computational methods, polymeric liquids

Lonnie D. Shea, Ph.D., Michigan, 1997
Tissue engineering, gene therapy

Randall Q. Snurr, Ph.D., Berkeley, 1994
Adsorption and diffusion in porous media, molecular modeling

Melody A. Swartz, Ph.D., M.I.T., 1998
Biomedical transport phenomena

John M. Torkelson, Ph.D., Minnestota, 1983
Polymer science, membranes

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David T. Leighton, Jr.
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Combustion Synthesis
Drug Delivery
Electrochemical Processes
Environmentally Conscious Design
Enzyme Encapsulation
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- **Robert S. Brodkey,** *Wisconsin*
  Experimental Measurements for Validation of Computational Fluid Mechanics and Applications to Mixing Process Applications
- **Jeffrey J. Chalmers**
  Immunumagnetic Cell Separation, Effect of Hydrodynamic Forces on Cells, Interfacial Phenomena and Cells, Bioengineering, Biotechnology, Cancer Detection
- **L.S. Fan,** *West Virginia*
  Fluidization, Particle Technology, Particulates Reaction Engineering
- **Martin Feinberg,** *Princeton*
  Mathematics of Complex Chemical Systems
- **Winston Ho,** *Illinois-Urbana*
  Membrane Separations with Chemical Reaction and Fuel-Cell Fuel Processing
- **Kurt W. Koelling,** *Princeton*
  Rheology, Polymer Processing, Microfluidics
- **Isamu Kusaka,** *CalTech*
  Nucleation
- **L. James Lee,** *Minnesota*
  Polymer and Composite Processing, Micro/-Nano-Fabrication, BioMEMS
- **Umit S. Ozkan,** *Iowa State*
  Heterogeneous Catalysis, Kinetics, Catalytic Materials
- **James F. Rathman,** *Oklahoma*
  Colloids, Interfaces, Surfactants, Molecular Self-Assembly, Bioinformatics
- **David L. Tomasko,** *Illinois-Urbana*
  Separations, Molecular Thermodynamics and Materials Procesing in Supercritical Fluids
- **Shang-Tian Yang,** *Purdue*
  Biochemical Engineering, Biotechnology, and Tissue Engineering
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Chemical Engineering

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Coal Conversion Technology and Desulfurization
Aerosol Science and Technology
Process Control
Separations
Energy and Environmental Engineering
Thin Film Materials
Chemical Reaction Engineering
Bioreactor Analysis
Downstream Processing of Proteins
Biomedical Engineering

Financial Aid

Financial support includes teaching and grant-related associateships and fellowships ranging from $14,000 to $18,000 per twelve months. In addition, students are granted a full tuition scholarship for both the regular and summer academic terms. Stocker Fellowships are available to especially well-qualified students.

The Faculty

Gerardine G. Botte *(Ph.D., South Carolina, 2000)*
W. J. Russell Chen *(Ph.D., Syracuse, 1974)*
Nicholas Dinos, Emeritus *(Ph.D., Lehigh, 1967)*
Douglas J. Goetz *(Ph.D., Cornell, 1995)*
Tingyue Gu *(Ph.D., Purdue, 1990)*
Daniel A. Gulino *(Ph.D., Illinois, 1983)*
Srdjan Nesic *(Ph.D., Saskatchewan, 1991)*
Michael E. Prudich, Chair *(Ph.D., West Virginia, 1979)*
Darin Ridgway, P.E. *(Ph.D., Florida State, 1990)*
Kendree J. Sampson *(Ph.D., Purdue, 1981)*
Valerie L. Young *(Ph.D., Virginia Tech., 1992)*

For More Information Contact:

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Faculty & Research Interests

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■ **Brian P. Grady,** Associate Professor • *multiphase & block copolymers • ion-containing polymers • polymer-matrix composites • biodegradable and bioabsorbable polymers • nanotechnology at interfaces*

■ **Roger G. Harrison, Jr.,** Associate Professor • *production of proteins & peptides using recombinant DNA technology • separation & purification of biochemicals • protein engineering for biomedical and environmental application • protein engineering*

■ **Jeffrey H. Harwell,** Conoco/DuPont Professor, Executive Associate Dean for the College of Engineering • *tertiary oil recovery • unconventional low energy separation processes • mass transfer • dynamics of multicomponent mass transfer processes • surface phenomena • adsorption kinetics • subsurface remediation*

■ **Lloyd L. Lee,** C.M. Sliepcevich Professor • *thermodynamics • molecular liquid theory • statistical mechanics • interactions in nanostructures • Monte Carlo & molecular dynamics studies • conformal solution theory • natural gas properties • polar fluids, ionic solutions & molten salts • surface adsorption*

■ **Lance L. Lobban,** Winn Chair & Director • *catalytic reaction rate mechanisms & modeling • partial oxidation of hydrocarbons • photocatalysis*

■ **Richard G. Mallinson,** Professor • *chemical reaction engineering • energy project valuation • synthetic and alternative fuels • natural gas utilization • methane conversion*

■ **Peter S. McFetridge,** Research Assistant Professor, Director of Cell & Tissue Culture Facility • *vascular tissue engineering • biomedical design, development and application • vascular perfusion reactor engineering*

■ **Matthias U. Nollert,** Associate Professor • *biomedical engineering • cellular metabolism and transport • platelet and leukocyte adhesion • fluid mechanics*

■ **Edgar A. O'Rear, III,** Winn Professor • *drug delivery• surface chemistry & physics • kinetics • blood trauma associated with medical devices • biorheology • organic chemistry*

■ **Dimitrios Papavassiliou,** Assistant Professor • *integrated process simulations • transport phenomena in biological systems • small scale transport at the interface between statistical mechanics and classical mechanics*

■ **Daniel E. Resasco,** S.A. Wilson Professor • *heterogeneous catalysis, reaction engineering & kinetics • design of catalysts for pollutant abatement • carbon nanotubes • physical chemistry of surfaces*

■ **Melissa M. Rieger,** Assistant Professor • *electrochemical phenomena and electrochemical engineering • carbon nanotube electro-chemistry • material systems and electrochemical processes in microelectronic processing • electrochemical behavior of polymeric materials*

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D. Alan Tree (Ph.D., University of Illinois)
Jan Wagner (Ph.D., University of Kansas)
James R. Whiteley (Ph.D., Ohio State University)

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Hazardous Wastes
Ion Exchange
Molecular Design
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- **K. L. Levien**
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University of Pennsylvania
Department of Chemical and Biomolecular Engineering

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Stuart W. Churchill *Combustion, incineration, crystal growth, rate processes*

Russell J. Composto *Polymeric materials science, surface and interface studies*

John C. Crocker *Microrheology of biopolymers, recA searching, 3-D microscopy, device biophysics*

Scott L. Diamond *Endothelial cell mechanobiology, drug and gene delivery, biotransport phenomena*

Dennis E. Discher *Cell and molecular mechanics, biomembrane and biopolymer mesostructures and functions*

William C. Forsman *Polymer science and engineering*

Eduardo D. Glandt *Classical and statistical thermodynamics, random media*

Raymond J. Gorte *Heterogeneous catalysis, supported metals, anodes for solid-oxide fuel cells, zeolites*

David J. Graves *Biochemical and biomedical engineering, biotechnology*

Daniel A. Hammer *Cellular bioengineering, biointerfacial phenomena, adhesion*

Alan L. Myers *Adsorption of gases and liquids, molecular simulation*

Daniel D. Perlmutter *Chemical reactor design, gas-solid reactions, gel kinetics*

John A. Quinn *Membrane transport, biochemical/biomedical engineering*

Warren D. Seider *Process analysis, simulation, design, and control*

Wen K. Shieh *Bioenvironmental engineering, environmental systems modeling*

Talid R. Sinno *Transport and reaction, statistical mechanical modeling*

Lyle H. Ungar *Artificial intelligence in process control, neural networks*

John M. Vohs *Surface science, catalysis, electronic materials processing*

Karen I. Winey *Polymer morphology, processing, and property interrelationships*

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Antonios Armaou *(Univ of CA at Los Angeles)*—Process Control, System Dynamics

Aziz Ben-Jebria *(Univ. of Paris)*—Respiratory Fluid Flow and Uptake, Inhalation Toxicology

Ali Borhan *(Stanford)*—Fluid Dynamics, Transport Phenomena

Alfred Carlson *(Wisconsin)*—Biotechnology, Bioseparations

Lance Collins *(Penn)*—Turbulent Flow, Combustion

Wayne R. Curtis *(Purdue)*—Plant Biotechnology

Ronald P. Danner *(Lehigh)*—Polymers, Phase Equilibria, Diffusion

J. Larry Duda *(Delaware)*—Polymers, Diffusion Thermodynamics, Tribology, Fluid Mechanics, Rheology

Kristen Fichthorn *(Michigan)*—Statistical Mechanics, Fluid-Solid Interfaces, Molecular Simulation

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• Catalyst Deactivation	Vladimir Kovalchuk	John W. Tierney
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• Novel Materials		
• Organometallic Chemistry		
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• Clean Fuels From Coal	Robert M. Enick	Gerald D. Holder
• Contaminated Soil Cleanup	Badie I. Morsi	
• Stack Gas Cleanup		
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• Interfacial Behavior	J. Thomas Lindt	Joseph J. McCarthy
• Polymer/Composite Modeling	Sachin Velankar	
• Polymer Processing		
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• Polymer-Fluid Interactions	Joseph J. McCarthy	Robert S. Parker
• Process Modeling & Control		
• Particulate Systems Transport		

Degree Programs: PhD and MS in Chemical Engineering
MS in Petroleum Engineering

Information on Fellowships and Applications:

Graduate Coordinator
Chemical and Petroleum Engineering
1249 Benedum Hall
University of Pittsburgh
Pittsburgh, PA 15261

412-624-9630

che.pitt.edu

The University of Pittsburgh is an affirmative action, equal opportunity institution.

Princeton University

Ph.D. and M.Eng. Programs in Chemical Engineering

Faculty

Ilhan A. Aksay
Jay B. Benziger
Jeffrey D. Carbeck
Pablo G. Debenedetti (Chair)
Christodoulos A. Floudas
Yannis G. Kevrekidis
Morton D. Kostin
Athanassios Z. Panagiotopoulos
Robert K. Prud'homme
Richard A. Register
William B. Russel
Lynn M. Russell
Dudley A. Saville
George W. Scherer
Stanislav Y. Shvartsman
Sankaran Sundaresan
Salvatore Torquato
Sandra M. Troian
T. Kyle Vanderlick
James Wei
David W. Wood

- Applied and Computational Mathematics
  - *Computational Chemistry, Biology, and Materials*
  - *Systems Modeling and Optimization*
- Biotechnology
  - *Biomaterials*
  - *Metabolic Engineering*
  - *Protein and Enzyme Engineering*
  - *Mathematical Biology*
- Environmental Science and Engineering
  - *Aerosol Physics and Chemistry*
  - *Atmospheric Chemistry*
  - *Art and Infrastructure Conservation*
- Materials: Synthesis/Processing/Structure/Properties
  - *Adhesion and Interfacial Phenomena*
  - *Ceramics*
  - *Colloidal Dispersions*
  - *Complex Fluids*
  - *Nanoscience and Nanotechnology*
  - *Polymers*
- Process Engineering and Science
  - *Chemical Reactor Design, Stability, and Dynamics*
  - *Heterogeneous Catalysis*
  - *Process Control and Operations*
  - *Process Synthesis and Design*
- Thermodynamics and Statistical Mechanics
  - *Glasses*
  - *Kinetic and Nucleation Theory*
  - *Liquid State Theory*
  - *Molecular Simulation*
- Fluid Mechanics and Transport Phenomena
  - *Electrohydrodynamics*
  - *Granular and Multiphase Flow*
  - *Microfluidics and Biological Flows*
  - *Rheology*

Write to: Director of Graduate Studies
Chemical Engineering
Princeton University
Princeton, NJ 08544-5263

or call: 1-800-238-6169

or email: chegrad@princeton.edu

Please visit our website: http://www.princeton.edu/~chemical

CHEMICAL ENGINEERING

PURDUE UNIVERSITY

FACULTY

Ronald P Andres
Osman A. Basaran
Gary E. Blau
James M. Caruthers
David S. Corti
W. Nicholas Delgass
Roger E. Eckert
Elias I. Franses
Robert E. Hannemann
Michael T. Harris
Hugh W. Hillhouse
R. Neal Houze
Gil U. Lee
John A. Morgan
Joseph F. Pekny
Nicholas A. Peppas
Doraiswami Ramkrishna
Gintaras V. Reklaitis
Jennifer L. Sinclair
Kendall Thomson
George T. Tsao
Venkat Venkatasubramanian
Nien-Hua L. Wang
Phillip C. Wankat

RESEARCH AREAS

Biomedical Engineering
Engineering
Catalysis and Reaction Engineering
Fluid Mechanics and Transport Phenomena
Interfacial Engineering and Colloid Science
Molecular Modeling and Statistical Mechanics
Nanofabrication and Nanomaterials
Particle Technology
Polymer Materials
Process Systems Engineering
Separation Processes
Surface Science

Financial Assistance

Fellowships
Research Assistantships
Teaching Assistantships

Degrees Offered

Master of Science
Doctor of Philosophy

For More Information

Graduate Studies
Purdue University
1283 Chemical Engineering Bldg.
West Lafayette, Indiana 47907-1283

Phone: (765) 494-4057
www.che.purdue.edu

Chemical Engineering at

Rensselaer Polytechnic Institute

The Chemical Engineering Department at Rensselaer has long been recognized for its excellence in teaching and research. Its graduate programs lead to research-based M.S. and Ph.D. degrees and to a course-based M.E. degree. Programs are also offered in cooperation with the School of Management and Technology which lead to an M.E. in Chemical Engineering and to an MBA or the M.S. in Management. Owing to funding, consulting, and previous faculty experience, the department maintains close ties with industry. Department web site:
http://www.eng.rpi.edu/dept/chem-eng/

Located in Troy, New York, Rensselaer is a private school with an enrollment of some 6000 students. Situated on the Hudson River, just north of New York's capital city of Albany, it is a three-hour drive from New York City, Boston, and Montreal. The Adirondack Mountains of New York, the Green Mountains of Vermont, and the Berkshires of Massachusetts are readily accessible. Saratoga, with its battlefield, racetrack, and Performing Arts Center (New York City Ballet, Philadelphia Orchestra, and jazz festival) is nearby.

Application materials and information from:

Graduate Services
Rensselaer Polytechnic Institute
Troy, NY 12180-3590
Telephone: 518-276-6789
e-mail: grad-admissions@rpi.edu
http://www.rpi.edu/dept/grad-services/

Faculty and Research Interests

Michael M. Abbott, abbotm2@rpi.edu
Thermodynamics; equations of state; phase equilibria

Elmar R. Altwicker, altwie@rpi.edu
Professor Emeritus
Spouted-bed combustion; incineration; trace-pollutant kinetics

Georges Belfort, belfog@rpi.edu
Membrane separations; adsorption; biocatalysis; MRI, interfacial phenomena

B. Wayne Bequette, bequeb@rpi.edu
Associate Department Chair
Process modeling, control, design, and optimization

Henry R. Bungay III, bungah@rpi.edu
Professor Emeritus
Wastewater treatment; biochemical engineering

Timothy S. Cale, calet@rpi.edu
Semiconductor materials processing; transport and reaction analyses

Steven M. Cramer, crames@rpi.edu
Displacement, membrane, and preparative chromatography; environmental research

Jonathan S. Dordick, dordick@rpi.edu
Department Chair
Biochemical engineering; biocatalysis, polymer science, bioseparations

Arthur Fontijn, fontia@rpi.edu
Combustion; high-temperature kinetics; gas-phase reactions

Shekhar Garde, gardes@rpi.edu
Macromolecular self-assembly, computer simulations, statistical thermodynamics of liquids, hydration phenomena

William N. Gill, gillw@rpi.edu
Microelectronics; reverse osmosis; crystal growth; ceramic composites

Ravi S. Kane, kaner@rpi.edu
Polymers; biosurfaces; biomaterials; nanomaterials

Sanat K. Kumar, kumar@rpi.edu
Polymer nanostructures, nanocomposites, dynamics of glasses and gels, thermodynamics of complex fluids

Howard Littman, littmh@rpi.edu
Professor Emeritus
Fluid/particle systems; fluidization, spouting, pneumatic transport

E. Bruce Nauman, nauman@rpi.edu
Polymer blends; nonlinear diffusion; devolatilization; polymer structure and properties; plastics recycling

Joel L. Plawsky, plawsky@rpi.edu
Electronic and photonic materials; interfacial phenomena; transport phenomena

Susan Sharfstein, sharfs@rpi.edu
Biochemical engineerig, mammalian cell culture, recombinant protein production

Hendrick C. Van Ness, vanneh@rpi.edu
Institute Professor Emeritus

Peter C. Wayner, Jr., wayner@rpi.edu
Heat transfer; interfacial phenomena; porous materials

RICE

Chemical Engineering at Rice University

FACULTY

- **William W. Akers**† *(Michigan, 1950)*
- **Constantine D. Armeniades** *(Case Western Reserve, 1969)*
- **Walter G. Chapman** *(Cornell, 1988)*
- **Sam H. Davis, Jr.**† *(MIT, 1957)*
- **Jacqueline L. Goveas** *(Princeton, 1996)*
- **J. David Hellums**† *(Michigan, 1961)*
- **Joe W. Hightower**† *(Johns Hopkins, 1963)*
- **George J. Hirasaki** *(Rice, 1967)*
- **Riki Kobayashi**† *(Michigan, 1951)*
- **Paul E. Laibinis** *(Harvard University, 1991)*
- **Nikolaos V. Mantzaris** *(Minnesota, 2000)*
- **Clarence A. Miller** *(Minnesota, 1966)*
- **Matteo Pasquali** *(Minnesota, 2000)*
- **Mark A. Robert** *(Swiss Fed. Inst. Tech., 1980)*
- **Michael S. Wong** *(MIT, 2000)*
- **Kyriacos Zygourakis** *(Minnesota, 1981)*

Joint with Bioengineering

- **Lary V. McIntire** *(Princeton, 1970)*
- **Antonios G. Mikos** *(Purdue, 1988)*
- **Ka-Yiu San** *(Caltech, 1984)*
- **Jennifer L. West** *(Texas, 1996)*

† *Emeritus Faculty*

THE UNIVERSITY

- Rice is a leading research university—small, private, and highly selective—distinguished by a collaborative, highly interdisciplinary culture
- Located only a few miles from downtown Houston, it occupies an architecturally distinctive, 300-acre campus shaded by nearly 4,000 trees.
- State-of-the-art facilities and laboratories, internationally renowned centers and institutes, and one of the country's largest endowments support an ideal learning and living environment.

THE DEPARTMENT

- Offers Ph.D., M.S., and M.Ch.E degrees.
- Currently has 50 graduate students (predominantly Ph.D.).
- Provides stipends and tuition waivers to full-time Ph.D. students.
- Special fellowships with high stipends are available for outstanding candidates.
- Emphasizes interdisciplinary studies in collaboration with researchers from other Rice departments, NASA, the Texas Medical Center, and R&D centers of petrochemical companies.

FACULTY RESEARCH AREAS

- Biochemical Engineering
- Biomedical Engineering
- Complex Fluids
- Computational Engineering
- Control and Optimization
- Environmental Remediation
- Equilibrium Thermodynamic Properties
- Fluid Mechanics
- Interfacial Phenomena
- Kinetics and Catalysis
- Nanotechnology
- NMR Properties of Fluids
- Petroleum Engineering
- Polymer Science
- Reaction Engineering
- Rheology
- Statistical Mechanics
- Tissue Engineering
- Transport Phenomena

For more information and graduate program applications, write to:

Chair, Graduate Admissions Committee
Chemical Engineering Department, MS-362
Rice University
P.O,. Box 1892
Houston, TX 77251-1892

Or visit our website at:

http://www.rice.edu/ceng

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The Chemical Engineering Department at Rowan University is housed in Henry M. Rowan Hall, a new $28 million, 95,000 sq. ft. multidisciplinary teaching and research space. An emphasis on project management, process research and development, and industrially relevant research prepares students for successful careers in high-tech fields. A recent award of $6 million as seed money for the South Jersey Technology Center will provide further opportunities for student training in emerging technologies.

Located in southern New Jersey, the nearby orchards and farms are a daily reminder that this is the Garden State. Cultural and recreational opportunities are plentiful in the area. Philadelphia and the scenic Jersey Shore are only a short drive away, and major metropolitan areas are within easy reach.

Faculty

C. Stewart Slater, Chair • *Rutgers University*

Kevin Dahm • *Massachusetts Institute of Technology*

Stephanie Farrell • *New Jersey Institute of Technology*

Zenaida Gephardt • *University of Delaware*

Robert P. Hesketh • *University of Delaware*

Kathryn Hollar • *Cornell University*

James Newell • *Clemson University*

Mariano J. Savelski • *University of Oklahoma*

Research Areas

Membrane Separations • Reaction Engineering • Mammalian & Insect Cell Culture • Pharmaceutical and Food Processing Technology • Biochemical Engineering • Green Engineering • Controlled Release • Novel Separation Processes • High-Performance Polymer Processing • Process Design and Optimization • Particle Technology • Supercritical Fluids • Environmental Engineering

For Additional information

Dr. Mariano J. Savelski . Graduate Student Advisor . Department of Chemical Engineering
Rowan University . 201 Mullica Hill Road . Glassboro, NJ 08028
Phone: (856) 256-5310 * Fax: (856) 256-5242 * E-mail: savelski@rowan.edu * Web: http://engineering.eng.rowan.edu

THE STATE UNIVERSITY OF NEW JERSEY

RUTGERS

Graduate Program in

Chemical & Biochemical Engineering

Research Areas

Biotechnology • Reaction Engineering • Process Systems Engineering • Pharmaceutical Engineering • Polymers

Faculty

► **Helen M. Buettner,** Associate Professor, Ph.D., University of Pennsylvania, 1987 • *Applied neurobiology, cell motility, cell-substrate interactions, crystallization of pharmaceuticals*

► **Yee C. Chiew,** Professor; Ph.D., University of Pennsylvania, 1984 • *Statistical thermodynamics, microscopic structures of fluids and particle systems, interfacial phenomena*

► **Alkis Constantinides,** Professor; D.E.Sc., Columbia University, 1970 • *Biochemical engineering, optimization and control of fermentation processes, applied numerical analysis, artificial intelligence*

► **Peter Couchman,** Professor; Ph.D., University of Virginia, 1976 • *Thermodynamics, transition, and equation of state behavior of single and multicomponent systems, particularly polymers; surface phenomena*

► **Burton Z. Davidson,** Professor; Ph.D., P.E., Northwestern University, 1963 • *Systems simulation and optimization, environmental engineering, health and safety engineering management*

► **Panos G. Georgopoulos,** Associate Professor; Ph.D., California Institute of Technology, 1986 • *Atmospheric/environmental chemical engineering, turbulent transport, biochemodynamic modeling*

► **Benjamin J. Glasser,** Assistant Professor; Ph.D., Princeton, 1995 • *Multiphase flows and reactors; granular materials and particulate suspensions; nonlinear dynamics of transport processes*

► **Masanori Hara,** Professor; Ph.D., Kyoto University, 1981 • *Polymer physics, polymer chemistry, polymer blends and composites, ionic polymers*

► **Marianthi G. Ierapetritou,** Assistant Professor; Ph.D., Imperial College, 1995 • *Process systems engineering; process design, planning, and scheduling; uncertainty and environmental considerations; nonlinear and mixed integer optimization*

► **Johannes G. Khinast,** Assistant Professor; Ph.D., Graz, 1995 • *Reaction and environmental engineering, reactive flows, numerical analysis of large dynamical systems*

► **Michael T. Klein,** Dean and Board of Governors Professor of Engineering; Sc.D., MIT, 1981 • *Kinetics, catalysis and reaction engineering; automated kinetic modeling; hydrocarbon conversion; reactions in supercritical fluids*

► **Prabhas V. Moghe,** Associate Professor; Ph.D., University of Minnesota, 1993 • *Cell and tissue engineering; cell-biomaterial interactions; biomimetic materials*

► **Fernando Muzzio,** Professor; Ph.D., University of Massachusetts, 1991 • *Transport phenomena, mixing, chaotic flows, powder technology*

► **Henrik Pedersen,** Professor; Ph.D., Yale University, 1978 • *Biochemical engineering, immobilized enzymes, plant cell biotechnology, fiber-optic sensors*

► **Charles M. Roth,** Assistant Professor; Ph.D., University of Delaware, 1994 • *Nucleic acid biotechnology, molecular biophysics and bioengineering, bioseparations*

► **Jerry I. Scheinbeim,** Professor; Ph.D., University of Pittsburgh, 1975 • *Polymer electroprocessing, structure-electroactive properties relationships in polymeric materials, ferroelectric, piezoelectric, pyroelectric, dielectric and electrostrictive properties of polymers*

► **M. Silvina Tomassone,** Assistant Professor; Ph.D., Northeastern University, 1998 • *Molecular dynamics, interfacial analysis, phase transitions*

► **Shaw S. Wang**, Professor; Ph.D., Rutgers University, 1970 • *Kinetics and thermodynamics of food process engineering, and studies of biochemical and biological processes.*

► **Martin L. Yarmush,** Professor; Ph.D., Rockefeller University, 1979; M.D., Yale University, 1984 • *Applied immunology, artificial organs, bioseparations, protein engineering, biotechnology*

FELLOWSHIPS, TRAINEESHIPS, AND ASSISTANTSHIPS AVAILABLE

For further information contact:

Graduate Program in Chemical and Biochemical Engineering • Rutgers, The State University of New Jersey
School of Engineering • 98 Brett Road • Piscataway, NJ 08854-8058 • Phone (732) 445-4950 • Fax (732) 445-2421
Email: cbemail@sol.rutgers.edu • http://sol.rutgers.edu

Graduate Studies

in Chemical & Environmental Engineering at National University of Singapore

NUS National University of Singapore

www.chee.nus.edu.sg

PROCESS & SYSTEMS ENGINEERING
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- Process Modeling & Simulation
- Process Operations & Safety
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- Hazardous Waste Treatment

National University of Singapore is internationally acknowledged as one of the best universities in the Asia Pacific region, with a global outlook and focus on quality teaching, research and entrepreneurship. With more than 45 faculty members from diverse ethnic backgrounds and with excellent academic credentials from leading institutions around the world, the Department of Chemical and Environmental Engineering offers graduate programs that provide a stimulating and challenging learning experience. The Department has comprehensive top-notch research facilities for carrying out cutting edge research. Close ties with the industry and overseas institutions provide infusion of new ideas and maintain a creative and dynamic atmosphere in the Department.

GRADUATE PROGRAMS

Coursework-based
- Master of Science (Chemical Engineering) (with specialization option in biopharmaceutical engineering)
- Master of Science (Environmental Engineering)
- Master of Science (Safety, Health & Environmental Technology)
- NUS-UIUC Joint Master of Science (Chemical Engineering)

Research-based
- Master of Engineering
- Doctor of Philosophy
- NUS-UIUC Joint PhD Program

Contact Us At:

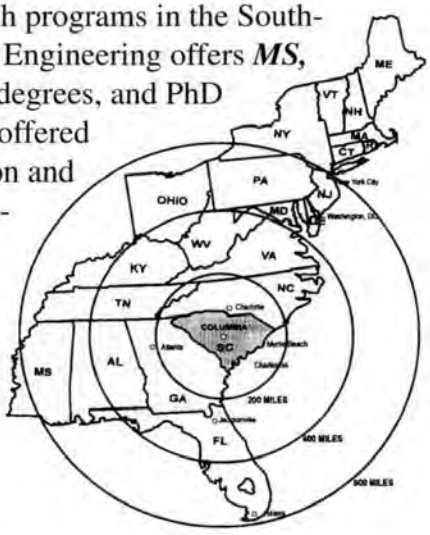
Department of Chemical & Environmental Engineering
National University of Singapore
10 Kent Ridge Crescent Singapore 117576
Tel: (65) 6874-8076 • Fax: (65) 6779-1936
E-mail: chegohsp@nus.edu.sg • http://www.chee.nus.edu.sg

Financial assistance is available for qualified applicants in the form of research scholarships.

Department of Chemical Engineering

UNIVERSITY OF SOUTH CAROLINA

The ***Department of Chemical Engineering*** at USC is booming! Research funding is at an all-time high—exceeding $4 million per year. This progressive department, with its dynamic young faculty, is already recognized as one of the top teaching and research programs in the Southeast. Chemical Engineering offers ***MS***, ***ME***, and ***PhD*** degrees, and PhD candidates are offered tuition reduction and highly competitive, twelve-month stipends, ranging from ***$20,100*** to ***$22,500*** per year.



For further information:

The Graduate Director, Department of Chemical Engineering,
Swearingen Engineering Center,
University of South Carolina, Columbia, SC 29208
Phone: 1-800-763-0527 • Fax: 1-803-777-8265
Web page: www.che.sc.edu

The University of South Carolina is located in Columbia, the state capital. Columbia is conveniently located in the center of the state and combines the benefits of a big city with the charm and hospitality of a small town. The area's sunny and mild climate, combined with its lakes and wooded parks, provide plenty of opportunities for year-round outdoor recreation. In addition, Columbia is only hours away from the Blue Ridge Mountains and the Atlantic Coast. Charlotte and Atlanta—cities that serve as Columbia's international gateways—are nearby.

Faculty

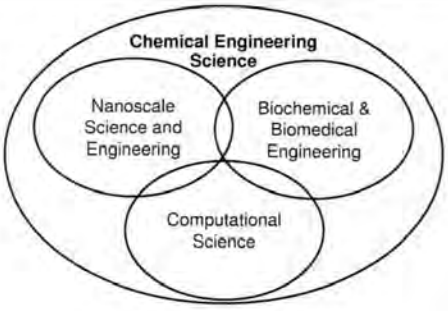
M.D. Amiridis, *Wisconsin*
J.W. Bender, *Delaware*
P.B. Balbuena, *Texas*
F.A. Gadala-Maria, *Stanford*
E.P. Gatzke, *Delaware*
J.H. Gibbons, *Pittsburgh*
M.A. Matthews, *Texas A&M*
T. Papathanasiou, *McGill*
H.J. Ploehn, *Princeton*
B.N. Popov, *Illinois*
J.A. Ritter, *SUNY Buffalo*
T.G. Stanford, *Michigan*
V. Van Brunt, *Tennessee*
J. W. Van Zee, *Texas A&M*
J.W. Weidner, *NC State*
R.E. White, *Cal-Berkeley*
C.T. Williams, *Purdue*

Research Programs

Adsorption Technology	***Pollution Prevention***
Batteries and Fuel Cells	***Process Control***
Colloids and Interfaces	***Rheology***
Composite Materials	***Separations***
Corrosion Engineering	***Sol-Gel Processing***
Crossflow Filtration	***Solvent Extraction***
Electrochemistry	***Surface Science***
Heterogeneous Catalysis	***Supercritical Fluids***
Molecular Simulations	***Thermodynamics***
Nanotechnology	***Waste Management***
Numerical Methods	***Waste Processing***

University at Buffalo
The State University of New York

Integrative Research at the Frontiers of Chemical Engineering



Faculty

Paschalis Alexandridis (MIT) • *amphiphilic polymers, self-assembly, complex fluids, nanomaterials, interfacial phenomena*
Stelios T. Andreadis (Michigan) • *bioengineering, gene therapy, tissue engineering of genetically modified skin*
Jeffrey R. Errington (Cornell) • *molecular simulation, statistical thermodynamics, biopreservation*
Vladimir Hlavacek (ICT -Prague) • *reaction engineering, nanopowders, explosives and detonations, analysis of chemical plants*
Mattheos Koffas (MIT) • *metabolic engineering, bioinformatics*
David A. Kofke (Pennsylvania) • *molecular modeling and simulation, solid phase equilibria*
Carl R. F. Lund (Wisconsin) • *heterogeneous catalysis, chemical kinetics, reaction engineering*
T. J. (Lakis) Mountziaris (Princeton) • *electronic and photonic materials, nanoparticles, biosensors, multiphase flows*
Sriram Neelamegham (Rice) • *biomedical engineering, cell biomechanics, vascular engineering*
Johannes M. Nitsche (MIT) • *fluid mechanics, transport phenomena, bioactive surfaces, biological pores, transdermal transport*
Eli Ruckenstein (Bucharest) • *catalysis, surface phenomena, colloids and emulsions, biocompatible surfaces and materials*
Michael E. Ryan (McGill) • *polymer and ceramics processing, rheology, non-Newtonian fluid mechanics*
Mark T. Swihart (Minnesota) • *chemical kinetics, modeling of reactive flows, computational chemistry, nanoparticle formation*
E. (Manolis) S. Tzanakakis (Minnesota) • *cell and tissue engineering, biochemical engineering*

Adjunct Faculty

V. James Hernandez (Microbiology) • *regulation of cellular responses*
William M. Mihalko (School of Medicine) • *orthopaedics*
Bruce Nicholson (Biological Sciences) • *gap junctions and connexins*
Athos Petrou (Physics) • *spectroscopy, semiconductor nanostructures*
Carel Jan van Oss (Microbiology) • *colloid and interface science*
Yaoqi Zhou (Biophysics) • *protein folding, simulation of biomolecules*

Emeritus Faculty in Residence

Robert J. Good (Michigan) • *adhesion and interface science, philosophy of science*
Thomas W. Weber (Cornell) • *process control*
Sol W. Weller (Chicago) • *catalysis, coal liquefaction, history of chemical engineering*

Chemical engineering faculty participate in many interdisciplinary centers and initiatives, including The Center for Advanced Molecular Biology and Immunology, The Center for Computational Research, The Center for Advanced Photonic and Electronic Materials, The Institute for Lasers, Photonics, and Biophotonics, The Institute for Bioinformatics, and The Center for Advanced Technology for Biomedical Devices

For more information and an application, write to: Director of Graduate Studies, Department of Chemical Engineering, University at Buffalo (SUNY), Buffalo, New York, 14260-4200, or go to **http://www.cheme.buffalo.edu**

All Ph.D. students are supported as research or teaching assistants. Additional fellowships sponsored by Praxair, Inc., The National Science Foundation IGERT program, and the State University of New York are available to exceptionally well-qualified applicants.

STEVENS
INSTITUTE OF TECHNOLOGY

- *Multidisciplinary environment, consisting of chemical and polymer engineering, chemistry, and biology*
- *Site of a major engineering research center; Highly Filled Materials Institute*
- *Scenic campus overlooking the Hudson River and metropolitan New York City*
- *Close to the world's center of science and culture*
- *At the hub of major highways, air, rail, and bus lines*
- *At the center of the country's largest concentration of research laboratories and chemical, petroleum, pharmaceutical, and biotechnology companies*

GRADUATE PROGRAMS IN CHEMICAL ENGINEERING

Full and part-time
Day and evening programs

- **MASTER'S**
- **CHEMICAL ENGINEER**
- **PH.D.**

Faculty

R. Besser (PhD, Stanford University)
R. Blanks (PhD, University of California at Berkeley)
G.B. DeLancey (PhD, University of Pittsburgh)
H. Du (PhD, Penn State University)
T.E. Fischer (ScD, Federal Inst. of Technology, Zurich)
B. Gallois (PhD, Carnegie-Mellon University)
D.M. Kalyon (PhD, McGill University)
S. Kovenklioglu (PhD, Stevens Institute of Technology)
A. Lawal (PhD, McGill University)
W.Y. Lee (PhD, Georgia Institute of Technology)
M. Libera (ScD, Massachusetts Inst. of Technology)
G. Rothberg (PhD, Columbia University)
K. Sheppard (PhD, University of Birmingham)

Research in

Micro-Chemical Systems
Polymer Rheology and Processing
Processing of Electronic and Photonic Materials
Processing of Highly Filled Materials
Chemical Reaction Engineering
Chemical Vapor Deposition
Biomaterials and Thin Films
Polymer Characterization and Morphology
High Temperature Gas-Solid and Solid-Solid Interactions
Environmental and Thermal Barrier Coatings
Tribochemistry and Tribology

For application, contact:
Office of Graduate Studies
Stevens Institute of Technology
Hoboken, NJ 07030
201-216-5234

For additional information, contact:
Chemical, Biochemical, and Materials Engineering Department
Stevens Institute of Technology
Hoboken, NJ 07030
201-216-5546

Financial Aid is Available to qualified students.

Stevens Institute of Technology does not discriminate against any person because of race, creed, color, national origin, sex, age, marital status, handicap, liability for service in the armed forces or status as a disabled or Vietnam era veteran.

Graduate Studies in Chemical Engineering
The University of Tennessee, Knoxville

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The Research

Graduate students and faculty working together to reach common goals – that partnership is at the heart of the University of Tennessee-Knoxville's Department of Chemical Engineering. It's a partnership that works, creating exciting and productive research in six major areas: (1) bio-process engineering, (2) molecular science and engineering, (3) separations and transport phenomena, (4) computer-aided process simulation and design, (5) polymer and composite processing, and (6) process control. These research programs reach out to other engineering and science departments, to the nearby Oak Ridge National Laboratory, and to industry, forming larger partnerships and creating an unsurpassed research environment.

The University

Founded in 1794 as Blount College, the first non-sectarian college west of the Appalachians, The University of Tennessee today is the state's largest university and Land-Grant institution with about 20,000 undergraduates, 5,700 graduate and professional students, and a faculty of 1,200. The University of Tennessee is located in Knoxville near the headwaters of the Tennessee River. Within an hour's drive are six Tennessee Valley Authority lakes and the Great Smoky Mountains National Park. The Knoxville metropolitan area has a population of 600,000 but enjoys a pleasant, generally uncrowded atmosphere and consistently ranks among the nation's top ten metropolitan areas in surveys on quality of life. East Tennessee has a four-season climate, ranging from warm summer temperatures to winter temperatures cold enough for snow skiing in nearby mountain resorts.

The Faculty

Paul R. Bienkowski (Ph.D., Purdue, 1975)
Bioprocessing, Thermodynamics

Duane D. Bruns (Ph.D., Houston, 1974)
Process Control, Modeling

John R. Collier (Ph.D., Case Institute, 1966)
Polymer Processing and Properties

Robert M. Counce (Ph.D., Tennessee, 1980)
Separations and Transport, Environmental

Peter T. Cummings (Ph.D., Melbourne, 1980)
Molecular Thermodynamics, Design, Environmental

Brian J. Edwards (Ph.D., Delaware, 1991)
Non-Newtonian Fluid Dynamics

Paul D. Frymier (Ph.D., Virginia, 1995)
Biochemical Engineering, Biosensors

David J. Keffer (Ph.D., Minnesota, 1996)
Molecular Modeling of Adsorption, Diffusion and Reaction in Zeolites

Charles F. Moore (Ph.D., Louisiana State, 1969)
Process Control

John W. Prados (Ph.D., Tennessee, 1957)
Safety and Risk Assessment

Tsewei Wang (Ph.D., M.I.T., 1977)
Process Control, Bioprocessing

Frederick E. Weber (Ph.D., Minnesota, 1982)
Computer-Aided Design, Radiation Chemistry

The Next Step

For additional information contact:

Department of Chemical Engineering
University of Tennessee-Knoxville
419 Dougherty Hall
Knoxville, TN 37996-2200
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World Wide Web: *http://www.che.utk.edu*

Adjunct and Part-Time Faculty from Oak Ridge National Laboratory

Hank D. Cochran (Ph.D., M.I.T.): *Thermodynamics, Statistical Mechanics*
Brian H. Davison (Ph.D., Caltech): *Biochemical Engineering*
Jack S. Watson (Ph.D., Tennessee): *Separations and Transport, Nuclear Fusion*

The University of Texas at Austin

★

Chemical Engineering at the University of Texas at Austin is an exciting, broad-based and interdisciplinary program, with faculty of diverse research interests. We are one of the leading programs in chemical engineering excelling in all aspects of scholarship, research and education. Both M.S. ChE and Ph.D ChE degrees are offered. Fellowships and research assistantships are provided, including tuition and fees.

Faculty and their research

David T. Allen, Ph.D., Caltech, 1983 • environmental modeling, reaction engineering
Angela M. Belcher, Ph.D., U. of C. Santa Barbara, 1997 • organic/inorganic, biomolecular & biological-electronic hybrid materials
Roger T. Bonnecaze, Ph.D., Caltech, 1991 • suspension rheology, transport phenomena, electrical impedance tomography
Thomas F. Edgar, Ph.D., Princeton U., 1971 • process modeling, control, optimization
John G. Ekerdt, Ph.D., U. of C. Berkeley • electronic materials chemistry, surface science
R. Bruce Eldridge, Ph.D., U. of Texas, 1986 • separations research
Benny Freeman, Ph.D., U. of C. Berkeley, 1988 • polymer structures, processing and properties
Venkat Ganesan, Ph.D., MIT, 1999 • statistical mechanics, simulations of self-assembly in complex fluids
George Georgiou, Ph.D., Cornell U., 1987 • microbial, protein biotechnology
Peter F. Green, Ph.D., Cornell U., 1985 • materials science, polymer melts
Adam Heller, Ph.D., Hebrew U., 1961 • electrochemical biosensing, environmental photoelectrochemistry
Gyeong S. Hwang, Ph.D., Caltech, 1999 • multiscale modeling & simulation, semiconductors, nanotechnology
Keith P. Johnston, Ph.D., U. of Illinois, 1981 • polymer and surface thermodynamics, supercritical fluids
Miguel José-Yacaman, Ph.D., National University of Mexico, 1973 • materials science, electron microscopy, nanoparticles
Brian A. Korgel, Ph.D., U. of C. Los Angeles, 1997 • complex fluids, nanostructured materials
Douglas R. Lloyd, Ph.D., U. of Waterloo, 1977 • polymeric membrane formation, liquid separations
Yueh-Lin Loo, Ph.D., Princeton U., 2001 • polymer physics & chemistry, micro- & nanostructured materials
C. Buddie Mullins, Ph.D., Caltech, 1990 • surface science, molecular beams, semiconductor thin-film growth
S. Joseph Qin, Ph.D., U. of Maryland, 1992 • process modeling and control
Gary T. Rochelle, Ph.D., U. of C. Berkeley, 1977 • air pollution control, reactive mass transfer
Peter J. Rossky, Ph.D., Harvard U., 1978 • theoretical chemistry, liquids, condensed phase quantum dynamics
Isaac C. Sanchez, Ph.D., U. of Delaware, 1969 • statistical thermodynamics of polymer liquids and solutions
Christine E. Schmidt, Ph.D., University of Illinois, 1995 • cell and tissue engineering
Makul M. Sharma, Ph.D., U. of Southern California, 1985 • surface and colloid chemistry
Thomas M. Truskett, Ph.D., Princeton U., 2001 • statistical mechanics, molecular modeling
J. Michael White, Ph.D., U. of Illinois, 1966 • chemical reactions on surfaces
C. Grant Willson, Ph.D., U. of C. Berkeley, 1973 • polymer synthesis, photochemical processing

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Advanced Catalysts ■ ***Interfacial Transport*** ■ ***Kinetics, Catalysis and Reaction Engineering*** ■ ***Microelectronic Materials*** ■ ***Molecular Simulations*** ■ ***Nanomaterials*** ■ ***Polymers*** ■ ***Computer-Aided Process Design and Modeling*** ■ ***Separations*** ■ ***Supercritical Phenomena/ Technology*** ■ ***Thermodynamics***

For More Information

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Faculty

R.G. Anthony, Head • Ph.D., University of Texas, 1966
C.D. Holland Professor
Catalysis, reaction engineering ion exchange

A. Akgerman • Ph.D., U. of Virginia, 1971
Chevron II Professor
Reaction engineering, waste treatment

J.T. Baldwin, Ph.D. • Texas A&M University, 1968
Process design

M.A. Bevan, Ph.D. • Carnegie Mellon University, 1999
Colloidal Science

D.B. Bukur, Associate Head • Ph.D., U. of Minnesota, 1974
Reaction engineering, math methods

J.A. Bullin, Ph.D. • U. of Houston, 1972, Professor Emeritus
Gas sweetening, asphalt characterizations

R. Darby, Ph.D. • Rice University, 1972, Professor Emeritus
Rheology, polymers

R.R. Davison, Ph.D. • Texas A&M U., 1962, Professor Emeritus
Asphalt characterization

L.D. Durbin, Ph.D. • Rice University, 1961, Professor Emeritus
Process control

M. El-Halwagi, Ph.D. • University of California, 1990
McFerrin Professor
Process integration

P.T. Eubank, Ph.D. • Northwestern University, 1961
Joe M. Nesbitt Professor
Thermodynamics

D.M. Ford, Ph.D. • University of Pennsylvania, 1996
Molecular modeling/transport

G. Froment, Ph.D. • University of Gent, Belgium, 1957
Reaction engineering

C.J. Glover, Ph.D. • Rice University, 1974
Director, Center for Asphalt & Materials Chemistry
Polymer solutions, asphalt characterization

K.R. Hall, Ph.D. • University of Oklahoma, 1967
Jack E. and Frances Brown Chair
Thermodynamics

D.T. Hanson, Ph.D. • University of Minnesota, 1968
Biochemical engineering

C.D. Holland, Ph.D. • Texas A&M Univ., 1953, Professor Emeritus
Separation processes, distillation, unsteady-state processes

J.C. Holste, Ph.D. • Iowa State University, 1973
Thermodynamics

M.T. Holtzapple, Ph.D. • University of Pennsylvania, 1981
Biochemical engineering

Y. Kuo, Ph.D., Dow Professor • Columbia University, 1979
Microelectronics

S. Mannan, Ph.D. • University of Oklahoma, 1986
Director, Mary Kay O'Connor Process Safety Center

E. Sevick-Muraca, Ph.D. • Carnegie Mellon University, 1989
Biomedical/Biochemical

D.F. Shantz, Ph.D. • University of Delaware, 2000
Structure-property relationships of porous materials, synthesis of new porous solids

V. Ugaz, Ph.D. • Northwestern University, 1999
Microfabricated Bioseparation Systems

THE UNIVERSITY OF TOLEDO

Chemical & Environmental Engineering

Faculty

Martin A. Abraham, Professor
Ph.D., University of Delaware
Green Chemistry and Engineering, Supercritical Fluids

Maria R. Coleman, Associate Professor
Ph.D., University of Texas at Austin
Membrane Separations, Bioseparations

Kenneth J. DeWitt, Distinguished Professor
Ph.D., Northwestern University
Transport Phenomena, Mathematical Modeling & Numerical Methods

John P. Dismukes, Professor
Ph.D., University of Illinois
Materials Processing, Management of Technological Innovation

Isabel C. Escobar, Assistant Professor
Ph.D., University of Central Florida
Membrane Fouling and Membrane Modifications

Saleh Jabarin, Professor
Ph.D., University of Massachusetts
Physical Properties of Polymers, Polymer Orientation & Crystallization

Dong-Shik Kim, Assistant Professor
Ph.D., University of Michigan
Biomaterials, Metabolic Pathway Control

Steven E. LeBlanc, Professor and Chair
Ph.D., University of Michigan
Chemical Process Control, Chemical Engineering Education

G. Glenn Lipscomb, Professor
Ph.D., University of California at Berkeley
Membrane Separations, Bioseparations, Education

Arunan Nadarajah, Professor
Ph.D., University of Florida
Transport in Biological Systems, Nanotechnology

Bruce E. Poling, Professor
Ph.D., University of Illinois
Thermodynamics and Physical Properties

Constance A. Schall, Associate Professor
Ph.D., Rutgers University
Enzyme Kinetics, Crystallization, Paraffin Deposition

Sasidhar Varanasi, Professor
Ph.D., State University of New York at Buffalo
Colloidal & Interfacial Phenomena, Hydrogels

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FULL-TIME PROFESSORS

Assoc. Prof. Eliana DeBernardez Clark, Ph.D. (U.N.L. Argentina) (on leave)
Biochemical engineering, protein folding, protein aggregation

Prof. Gregory D. Botsaris, Ph.D. (M.I.T.)
Crystallization, nucleation, applied surface science

Prof. Maria Flytzani-Stephanopoulos, Ph.D. (Univ. of Minnesota)
Environmental catalysis, pollution prevention, clean energy, and transportation technologies

Prof. David L. Kaplan, Ph.D. (Syracuse University)
Bioengineered polymers related to self-assembly, biomaterials and tissue engineering

Asst. Prof. Kyongbum Lee, Ph.D. (M.I.T.)
Biotechnology, metabolic engineering, bioinformatics

Assoc. Prof. Jerry H. Meldon, Ph.D. (M.I.T.)
Membrane science and technology, mass transfer with chemical reaction including mathematical modeling

Assoc. Prof. Daniel F. Ryder, Ph.D. (Worcester Polytechnic Institute)
Advanced process control applications

Prof. Nak-Ho Sung, Ph.D. (M.I.T.)
Polymers and composites, interface science, polymer diffusion, surface modification

Prof. Kenneth A. Van Wormer, Sc.D. (M.I.T.)
Optimization, nucleation, reaction kinetics, VLSI fabrication

RESEARCH PROFESSORS

Asst. Prof. Aurelie Edwards, Ph.D. (M.I.T.)
Transport across biological membranes, role of microcirculation in the renal medulla

Asst. Prof. Regina Valuzzi, Ph.D. (Univ. of Massachusetts, Amherst)
Ordering of highly structured patterned polymers into complex nanostructured materials

Assoc. Prof. Vladimir Volloch, Ph.D. (Moscow University)
Cellular and molecular biology

ADJUNCT PROFESSORS

Asst. Prof. Dale Gyure, Ph.D. (University of Colorado)

Prof. Walter Juda, Ph.D. (University of Lyons)
Electrochemistry and chemical reaction engineering

Asst. Prof. Brian Kelley, Ph.D. (M.I.T.)
Novel methods for protein purification, large-scale purifications, high-density bacterial fermentation

Prof. Gordana Vunjak-Novakovic, Ph.D. (University of Belgrade)
Transport phenomena, tissue engineering, bioreactors

Asst. Prof. Stefan Winkler, Ph.D. (Tufts University)
Protein assembly

Tulane University

Department of Chemical Engineering

Faculty and Research Areas

Daniel C.R. DeKee • *Rheology of Natural and Synthetic Polymers • Constitutive Equations • Transport Phenomena and Applied Mathematics*

Richard D. Gonzalez • *Synthesis and Characterization of Supported Metal Catalysts • Fundamental Studies in Reactor Design • In-situ Spectroscopic Methods • Reactions in Organized Media*

Vijay T. John • *Biomimetic and Nanostructured Materials • Interfacial Phenomena • Polymer-Ceramic Composites • Surfactant Science*

Daniel J. Lacks • *Molecular Simulation • Thermodynamics of Condensed Phases • Dynamical Processes in Solids • Physical Properties of Polymer Materials • Density Functional Theory*

Victor J. Law • *Modeling Environmental Systems • Nonlinear Optimization and Regression • Transport Phenomena • Numerical Methods*

Yunfeng Lu • *Nanostructured and Microelectronic Materials, Sol-Gel Processes and Organic/Inorganic Hybrid Materials, Membrane Separations and Catalysts, Chemical Sensors and Biosensors*

Brian S. Mitchell • *Fiber Technology • Materials Processing • Composites*

Kim C. O'Connor • *Animal-Cell Technology • Organ/Tissue Regeneration • Recombinant Protein Expression*

Kyriakos D. Papadopoulos • *Colloid Stability • Coagulation • Transport of Multi-Phase Systems Through Porous Media • Colloidal Interactions*

Tulane is located in a quiet, residential area of New Orleans, approximately six miles from the world-famous French Quarter. The chemical engineering department currently enrolls approximately 40 full-time graduate students. Graduate fellowships include a tuition waiver plus stipend.

For Additional Information, Please Contact

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Engineering the World

The University of Tulsa

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Chemical Engineering at TU

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- Master of Engineering degree (a professional degree that can be completed in 18 months without a thesis)
- Special Master's degree for nonchemical engineering undergraduates

Financial aid is available, including fellowships and research assistantships.

The Faculty

L.P. Ford • Kinetics of dry etching of metals, surface science
K.D. Luks • Thermodynamics, phase equilibria
F.S. Manning • Industrial pollution control, surface processing of petroleum
C.L. Patton • Thermodynamics, applied mathematics
G.L. Price • Zeolites, heterogeneous catalysis
C.M. Sheppard • Refining reaction processes, process design, process hazard reduction
K.L. Sublette • Bioremediation, biological waste treatment, ecological risk assessment
K.D. Wisecarver • Multiphase reactors, multiphase flows

Further Information
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E-mail: chegradadvisor@utulsa.edu • Graduate School application: 1-800-882-4723

Vanderbilt University

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http://www.vuse.vanderbilt.edu/~cheinfo/che.htm

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For more information:

Director of Graduate Studies
Department of Chemical Engineering
Vanderbilt University • VU Station B 351604
Nashville, TN 37235-1604

R. Robert Balcarcel *(Ph.D., Massachusetts Institute of Technology)*
Biotechnology and bioengineering; mammalian cell cultures; cell life cycles; pharmaceutical production.

Robert J. Bayuzick *(Ph.D., Vanderbilt University)*
Solidification, nucleation; evolution of microstructure; microgravity science; physical metallurgy; containerless processing; oxide superconductor processing.

Frank M. Bowman *(Ph.D., California Institute of Technology)*
Air pollution; atmospheric chemistry mechanisms; gas-aerosol transport; modeling complex chemical reaction systems.

Peter T. Cummings *(Ph.D., University of Melbourne)*
Computational nanoscience and nanoengineering; molecular modeling of fluid and amorphous systems; parallel computing; computer-aided process design and optimization; bacterial migration in *in situ* bioremediation.

Kenneth A. Debelak *(Ph.D., University of Kentucky)*
Development of plant-wide control algorithms; intelligent process control; activity modeling; effect of changing particle structures in gas-solid reactions; environmentally benign chemical processes; mixing in bioreactors.

Tomlinson Fort *(Emeritus, Ph.D., University of Tennessee)*
Capillarity; insoluble monolayers/L-B films; adsorption; contact angles and wetting; polymer interfaces; spreading on liquid surfaces; fine particles; flow in porous media.

G. Kane Jennings *(Ph.D., Massachusetts Institute of Technology)*
Surface modification; experimental molecular engineering; corrosion inhibition; microelectronics processing.

M. Douglas LeVan *(Ph.D., University of California, Berkeley)*
Fixed-bed adsorption; adsorption equilibria; adsorption processes (pressure-swing adsorption, temperature-swing adsorption, adsorptive refrigeration): process design.

Bridget R. Rogers *(Ph.D., Arizona State University)*
Nucleation and microstructure evolution of thin films; fundamentals of thin film processing for microelectronic applications (mass transport, kinetics, and effects of substrate topography on CVD, sputter deposition and etch processes).

John A. Roth *(Ph.D., University of Louisville)*
Chemical reactor design; industrial waste water treatment; sorption processes; chemical oxidation for waste treatment; hazardous waste management; electrochemistry.

Karl B. Schnelle, Jr. *(Ph.D., Carnegie Mellon University)*
Turbulent transport in the environment, control of toxic emissions and SO_2 and NO_x from coal fired boilers, solution thermodynamics, applications of process simulation to microcomputers, supercritical extraction applied to soil remediation.

Robert D. Tanner *(Ph.D., Case Western Reserve University)*
In situ bubble fractionation of excreted proteins from growing baker's yeast; selective protein recovery from a semi-solid air fluidized bed fermentation process; bubble and foam fractionation of proteins.

University of Virginia

Graduate Studies in Chemical Engineering

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Giorgio Carta, *PhD, University of Delaware*
Adsorption, ion exchange, biocatalysis, environmentally benign processing

Robert J. Davis, *PhD, Stanford University*
Heterogeneous catalysis, characterization of metal clusters, reaction kinetics

Erik J. Fernandez, *PhD, University of California, Berkeley*
Purification of biological molecules, protein structure, magnetic resonance imaging and spectroscopy

Roseanne M. Ford, *PhD, University of Pennsylvania*
Environmental remediation, microbial transport in porous media

John L. Gainer, *PhD, University of Delaware*
Biochemical engineering, biomedical applications, environmentally benign solvents

Andrew C. Hillier, *PhD, University of Minnesota*
Interfacial engineering, electrochemistry, scanning probe microscopy

John L. Hudson, *PhD, Northwestern University*
Reaction system dynamics, chaos and pattern formation, electrochemistry

Donald J. Kirwan, *PhD, University of Delaware*
Mass transfer and separations, crystallization, biochemical engineering

Matthew Neurock, *PhD, University of Delaware*
Molecular modeling, computational heterogeneous catalysis, kinetics of complex reaction systems

James P. Oberhauser, *PhD, Univ. of California, Santa Barbara*
Polymer solution flow and microstructure

John P. O'Connell, *PhD, University of California, Berkeley*
Molecular theory and simulation with applications to physical and biological systems

Chemical Engineering at **Virginia Tech**

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Center for Composite Materials and Structures
Center for Adhesives and Sealant Science
Center for Biomedical Engineering
Center for Self-Assembled Nanostructures and Devices
Biotechnology and Tissue Engineering
Surface Chemistry and Catalysis
Colloid and Surface Science
Computer-aided Design
Nanotechnology and Biomedical Devices
Supercritical Fluids and High Pressure Processing

Faculty . . .

Donald G. Baird (Wisconsin)
Polymer processing, non-Newtonian fluid mechanics

David F. Cox (Florida)
Catalysis, ultrahigh vacuum surface science

Richey M. Davis (Princeton)
Colloids and polymer chemistry, nanostructured materials

Kimberly E. Forsten-Williams (Illinois)
Computational bioengineering and cell and tissue engineering

Aaron S. Goldstein (Carnegie Mellon)
Tissue engineering, interfacial phenomena in bioengineering

Erdogan Kiran [*Department Head*] (Princeton)
Supercritical fluids, polymer science, high pressure techniques

Y. A. Liu (Princeton)
Pollution prevention and computer-aided design

Eva Marand (Massachusetts)
Transport through polymer membranes, advanced materials for separations

S. Ted Oyama (Stanford)
Heterogeneous catalysis and new materials

Len Peters [*Vice Provost for Research*] (Pittsburgh)
Atmospheric transport

Peter R. Rony (U.C. Berkeley)
Chemical microengineering

Ravi Saraf (Massachusetts)
Nanotechnology and biomedical devices, polymers

Joseph T. Sullivan (Minnesota)
Marketing and chemical distribution

Kevin E. Van Cott (Virginia Tech)
Biotechnology, nanotechnology

William H. Velander (Penn State)
Transgenic livestock bioreactors, biosensors

Garth L. Wilkes (Massachusetts)
Structure-property processing behavior of polymeric materials

Virginia Tech

For further information write or call the director of graduate studies or visit our web page

Department of Chemical Engineering
133 Randolph Hall, Virginia Tech, Blacksburg, VA 24061

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Department of Chemical Engineering
Box 351750
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Phone: (206) 543-2250 Fax: (206) 543-3778
E-mail: grad.admissions@cheme.washington.edu
Web Page: http://depts.washington.edu/chemeng/

Chemical Engineering Faculty • Research Areas

Materials and Interfacial Phenomena

Stuart Adler, Ph.D., California (Berkeley) • Electrochemical Engineering; Solid-State Electrochemistry
G. Graham Allan (Joint), Ph.D., D.Sc., Glasgow • Fiber and Polymer Science
John C. Berg, Ph.D., California (Berkeley) • Interfacial Phenomena; Surface and Colloid Science
Samson A. Jenekhe, Ph.D., Minnesota • Polymer Science & Engineering; Optoelectronic/Photonic Materials
Shaoyi Jiang, Ph.D., Cornell • Interfacial Phenomena and Nanotechnology
René M. Overney, Ph.D., Basel, Switzerland • Nanoscale Surface Science and Polymer Physics
Daniel T. Schwartz, Ph.D., California (Davis) • Electrochemical Engineering; Electrolytic Thin-Film Science
James C. Seferis, Ph.D., Delaware • Polymeric Composites; Manufacturing and Teaming
Eric M. Stuve, Ph.D., Stanford • Electrochemical Surface Science; Fuel Cell Electrocatalysis

Biochemical Engineering and Bioengineering

François Baneyx, Ph.D., Texas (Austin) • Biotechnology; Protein Technology; Biochemical Engineering
David G. Castner, Ph.D., California (Berkeley) • Biomaterial and Biomolecule Surface Analysis, Self-Assembled Monolayers
Thomas A. Horbett (Joint), Ph.D., Washington • Biomaterials; Peptide Drug Delivery
Mary E. Lidstrom, Ph.D., Wisconsin • Environmental Biotechnology; Molecular Bioengineering
Buddy D. Ratner (Joint), Ph.D., Brooklyn Polytechnic • Biomaterials; Polymers; Surface Characterization

Information and Process Technology

Bruce A. Finlayson, Ph.D., Minnesota • Mathematical Modeling
Bradley R. Holt, Ph.D., Wisconsin • Process Design and Control
N. Lawrence Ricker, Ph.D., California (Berkeley) • Process Control and Optimization

Environmental Technology

E. James Davis, Ph.D., Washington • Colloid Science; Aerosol Chemistry and Physics; Electrokinetics
Barbara Krieger-Brockett, Ph.D., Wayne State • Reaction Engineering

Graduate Programs in Chemical Engineering

Washington State University

Master's and doctoral programs in WSU's Department of Chemical Engineering are closely aligned with industry and government interests that often lead to professional opportunities. Our emphases in bioengineering, environmental restoration, and hydrocarbon processing involve you in such projects as biotreatment of hazardous contamination, diagnostic medical devices, and converting natural gas to useful products. Our Center for Multiphase Environmental Research provides interdisciplinary opportunities to solve complex problems at the interface of air, water, and earth.

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Facilities

Facilities include the new Engineering Teaching and Research Laboratory in Pullman, a state-of-the-art building that houses the O.H. Reaugh Advanced Processing Lab. Other venues are the Spokane Intercollegiate Research and Technology Institute, and WSU Tri-Cities access to Hanford resources, such as the Environmental Molecular Science Lab and the Hanford Library.

Financial Assistance

All full-time ChemE graduate students at WSU receive financial support to help cover costs of education, living, and insurance.

Student Life

Pullman's residential campus offers single and family housing for graduate students. Families with children have access to highly rated K-12 schools.

Outdoor and recreational activities abound in the nearby mountains, rivers, and forests. Students may belong to the Graduate and Professional Student Association and numerous other student societies.

About WSU

Washington State University is a land-grant research university founded in Pullman in 1890. It enrolls more than 20,000 students at four campuses, and numerous Learning Centers throughout the state. As many as 100 advanced degrees are offered from 70 graduate programs within its eight colleges.

Faculty

Cornelius Ivory, Ph.D. Princeton, bioprocessing, separations, modeling

James Lee, Ph.D. Kentucky, bioprocessing, mixing

KNona Liddell, Ph.D. Iowa State, hazardous wastes, materials, electrochemistry, kinetics, chemical equilibria

Reid Miller, Ph.D. University of California, Berkeley, thermodynamics

R. Mahalingam, Ph.D. Newcastle-Upon-Tyne, England, hazardous wastes, materials, transport phenomena

James Petersen, Ph.D. Iowa State, bioremediation, bioprocessing, subsurface reactive flow and transport, optimization

Brent Peyton, Ph.D. Montana State, bioavailability, extremophilic bioprocessing, heavy metal flux in biofilms and porous materials

William Thomson, Ph.D. Idaho, materials, kinetics, catalysis

Bernie Van Wie, Ph.D. Oklahoma, bioprocessing, biomedical engineering

Richard Zollars, Ph.D. Colorado, colloidal and interfacial phenomena, separations

Contacts

Department of Chemical Engineering

Richard Zollars, ChemE Chair, 509-335-4332

Bernie Van Wie, Graduate Studies Coordinator, 509-335-4103

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WSU Graduate School

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Prof. Reid Miller and students hold a seminar typical of the small teacher-student ratio in WSU's ChemE Department.

Graduate Study in Chemical Engineering at

Washington University

Master's and Doctoral Programs

M. Al-Dahhan ► Chemical Reaction Engineering, Multiphase Reactors, Mass Transfer, Process Engineering
L. Angenent ► Biological Waste Conversion, Bioaerosol Control, Environmental Engineering
P. Biswas ► Aerosol Dynamics, Environmental Engineering
M. P. Dudukovic ► Multiphase Reaction Engineering, Tracer Methods, Environmental Engineering
J. T. Gleaves ► Heterogeneous Catalysis, Surface Science, Microstructured Materials
J. L. Kardos ► Composite Materials and Polymer Engineering
B. Khomami ► Rheology, Polymer and Composite Materials Processing
P. A. Ramachandran ► Chemical Reaction Engineering, Boundary Element Methods
R. Sureshkumar ► Applications of transport processes involving complex polymeric and celloidal fluids
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For Information Contact

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Department of Chemical Engineering
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Graduate Certificate in Polymer Engineering

Sandro R.P. da Rocha, Ph.D., UT Austin, 2000
Nanostructured materials from self-assembled amphiphiles in conventional and compressible media ◆ Drug delivery and sensing devices ◆ Molecular modeling and computer simulations

Esin Gulari, Ph.D., Caltech, 1973
Thermodynamics and transport properties of polymer solutions and melts ◆ Processing of polymers with supercritical fluids ◆ Light scattering based particle and drop sizing techniques

Yinlun Huang, Ph.D., Kansas State, 1992
Pollution prevention and waste minimization ◆ Process design and synthesis

Rangaramanujam Kannan, Ph.D., Caltech, 1994 — Dynamics of polymeric systems and interfaces ◆ Rheo-optical spectroscopy and scattering techniques

Ralph Kummler, Ph.D., John Hopkins, 1966 — Modeling of combined sewer overflows and sediments ◆ Chemical kinetics ◆ Computer simulation

Joseph F. Louvar, Ph.D., Wayne State, 1983 — Process design and safety ◆ Risk analysis

Charles Manke, Ph.D., California, Berkeley, 1983 — Polymer processing and rheology ◆ Molecular dynamics and kinetic theory of polymeric liquids

Guang-Zhao Mao, Ph.D., Minnesota, 1994 — Optoelectronic properties of thin films and crystals ◆ Self-assembly of polymers and surfactants ◆ Colloidal stability of waterborne paints ◆ Real time imaging of surface phenomena at the molecular level

Howard Matthew, Ph.D., Wayne State, 1992 — Tissue engineering and biomaterials ◆ Artificial organ substitutes

Simon Ng, Ph.D., Michigan, 1985 — Heterogeneous catalysis ◆ Spectroscopic and thermal analysis of material surfaces

Jeffrey Potoff, Ph.D., Cornell, 1999 — Molecular simulation ◆ Phase behavior ◆ Complex systems

Susil Putatunda, Ph.D., IIT Bombay, 1983 — Effects of microstructure on fatigue ◆ Fracture toughness ◆ Creep in metals and alloys

Erhard Rothe, Ph.D., Michigan, 1959 — Applications of high-powered UV lasers ◆ Machining of electronic chips ◆ Diagnostics of internal combustion

Steven Salley, Ph.D., Detroit, 1976 — Biochemical/medical engineering ◆ Design of artificial organs ◆ Immobilized enzyme reactors

Gina Shreve, Ph.D., Michigan, 1991 — Environmental and biochemical applications ◆ Microbially mediated biotransformations

Paul VanTassel, Ph.D., Minnesota, 1993 — Shape selective catalysis ◆ Protein adsorption and bioseparations

Contact:

Prof. Huang, Graduate Advisor, Chemical Engineering • yhuang@che.eng.wayne.edu
Prof. Kannan, Graduate Advisor, Materials Science and Engineering • rkannan@che.eng.wayne.edu

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Larry L. Baxter *(BYU)* • combustion of fossil and renewable fuels
Merrill W. Beckstead *(Utah)* • propellant combustion, modeling
Thomas H. Fletcher *(BYU)* • pyrolysis and combustion
Hugh B. Hales *(MIT)* • reservoir simulation
John H. Harb *(Illinois)* • coal combustion, electrochemical engineering
William C. Hecker *(UC Berkeley)* • kinetics and catalysis
John L. Oscarson *(Michigan)* • calorimetry and thermodynamics
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M. Von Braun	Hazardous Waste Site Analysis, Computer Mapping

For Further Information and Application write:
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MICHAEL KEZIRIAN
(Ph.D., Ch.E., MIT, 1996) *(Adjunct)* • Polymer sciences; non-Newtonian fluid mechanics; interfacial transport phenomenon; chemical engineering of satellite and space sciences: kinetics of liquid propulsion and system engineering

CHING-AN PENG
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MUHAMMAD SAHIMI
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RONALD SALOVEY
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(Ph.D., Ch.E., Cornell, 1982) • Thermodynamics and statistical mechanics; supercritical extraction

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YANIS C. YORTSOS
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