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D. W. Arnold, Ph.D. (Purdue)
C. S. Brazel, Ph.D. (Purdue)
E. S. Carlson, Ph.D. (Wyoming)
P. E. Clark, Ph.D. (Oklahoma State)
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R. A. Griffin, Ph.D. (Utah State)
D. T. Johnson, Ph.D. (Florida)
T. M. Klein, Ph.D. (NC State)
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M. D. McKinley, Ph.D. (Florida)
L. Y. Sadler III, Ph.D. (Alabama)
V. N. Schrodt, Ph.D. (Penn. State)
J. M. Wiest, Ph.D. (Wisconsin)

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

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FACULTY & RESEARCH AREAS

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Professor and Chair
Capillary hydrodynamics, multiphase flows, enhanced heat transfer surfaces.
(256) 890-7313, 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) 890-6194, cchen@che.uah.edu

Krishnan K. Chittur - Ph.D. (Rice)
Professor
Protein adsorption to biomaterials, FTR/ATR at solid-liquid interfaces, biosensing.
(256) 890-6850, kchittur@che.uah.edu

Douglas G. Hayes - Ph.D. (Michigan)
Assistant Professor
Enzyme reactions in nonaqueous media, separations involving biomolecules, lipids and surfactants, surfactant-based colloidal aggregates.
(256) 890-6874, 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) 890-6439, 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) 890-6954, jjweimer@matsci.uah.edu

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Department of Chemical and Materials Engineering
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Chemical Kinetics, Catalysis, Surface Phenomena

JAMES C. BAYGENTS, Associate Professor (Princeton)
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Sorption/desorption of Organics in Soils

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Bioremediation, Microbiology, White Rot Fungi, Hazardous Waste

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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

Gregory Raupp, Ph.D., Wisconsin. Gas-solid surface reactions mechanisms and kinetics, interactions between surface reactions and simultaneous transport processes, semiconductor materials processing, thermal and plasma-enhanced chemical vapor deposition (CVD)

Anneta Razatos, Ph.D., Texas at Austin. Bacterial adhesion, colloid interactions, AFM, biofilms, genetic engineering

Daniel Rivera, Ph.D., Caltech. Control systems engineering, dynamic modeling via system identification, robust control, computer-aided control system design

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

Materials Science and Engineering

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

Terry Alford, Ph.D., Cornell. Electronic materials, physical metallurgy, electronic thin films

Nikhilesh Chawla, Ph.D., Michigan. Lead-free solders, composite materials, powder metallurgy

Sandwip Dey, Ph.D., Alfred. Ceramics, high-κ dielectrics, sol-gel processing

Stephen Krause, Ph.D., Michigan. Characterization of structural changes in processing of semiconductors

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

For details concerning graduate opportunities in Chemical and Materials Engineering at ASU, please call Marlene Bolf at (480) 965-3313, or write to Subhash Mahajan, Chair, Chemical and Materials Engineering, Arizona State University, Tempe, Arizona 85287-6006 (smahajan@asu.edu).

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Harry T. Cullinan — *Carnegie Mellon University*
Christine W. Curtis — *Florida State University*
Steve R. Duke — *University of Illinois*
Mahmoud El-Halwagi — *University of California, Los Angeles*
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James A. Guin — *University of Texas, Austin*
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Y. Y. Lee — *Iowa State University*
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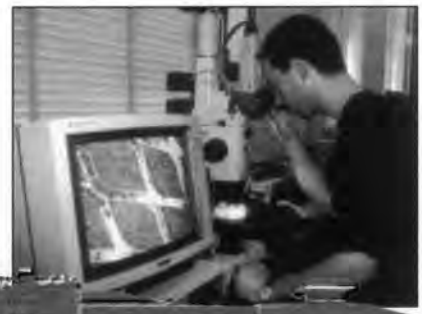

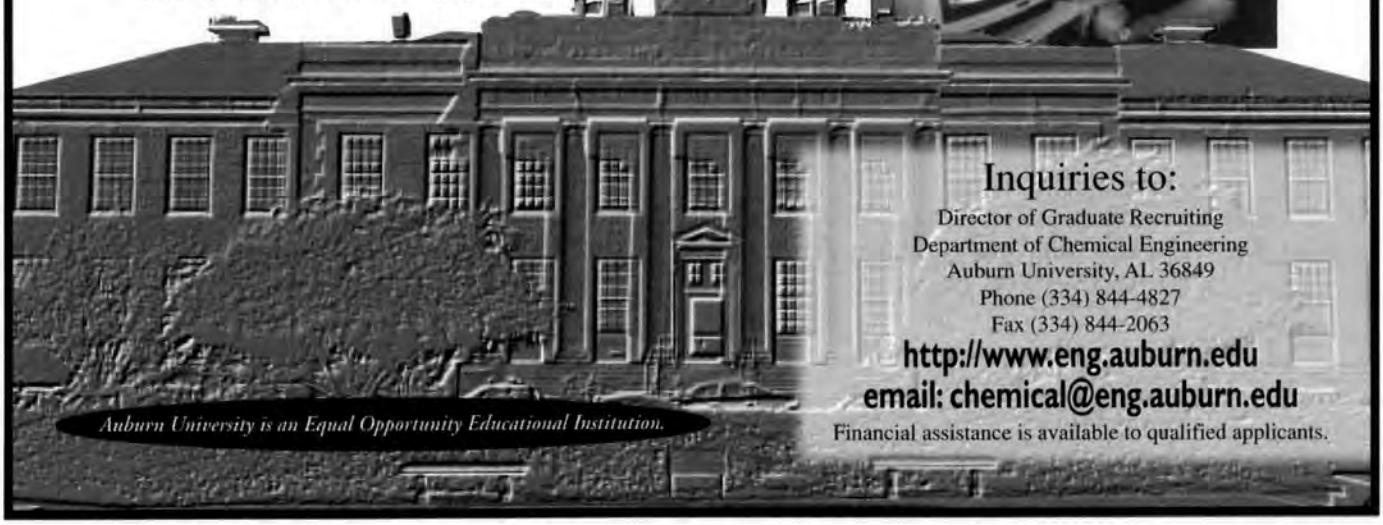

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Dr. A. K. Mehrotra • Chair, Graduate Studies Committee
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Faculty

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Roger B. Boulton, Professor • Ph.D., University of Melbourne, 1976 • *Fermentation and reaction kinetics, crystallization*

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

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*

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*

Marjorie L. Longo, Assistant Professor • Ph.D., University of California, Santa Barbara, 1993 • *Hydrophobic protein design for active control, surfactant microstructure, and interaction of proteins and DNA with biological membranes*

Benjamin J. McCoy, Professor • Ph.D., University of Minnesota, 1967 • *Supercritical extraction, pollutant transport*

Karen A. McDonald, Professor • Ph.D., University of Maryland, College Park, 1985 • *Plant cell culture bioprocessing algal cell cultures*

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*

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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Graduate Admission Chair
Professor Jeffery C. Gibeling
Department of Chemical Engineering & Materials Science
University of California, Davis
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P. D. Christofides

Y. Cohen

James Davis
(Associate Chancellor for Information Technology

M. W. Deem

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

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

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

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, Molecular Engineering of Materials, and Process Systems Engineering.

Fellowships are available for outstanding applicants 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

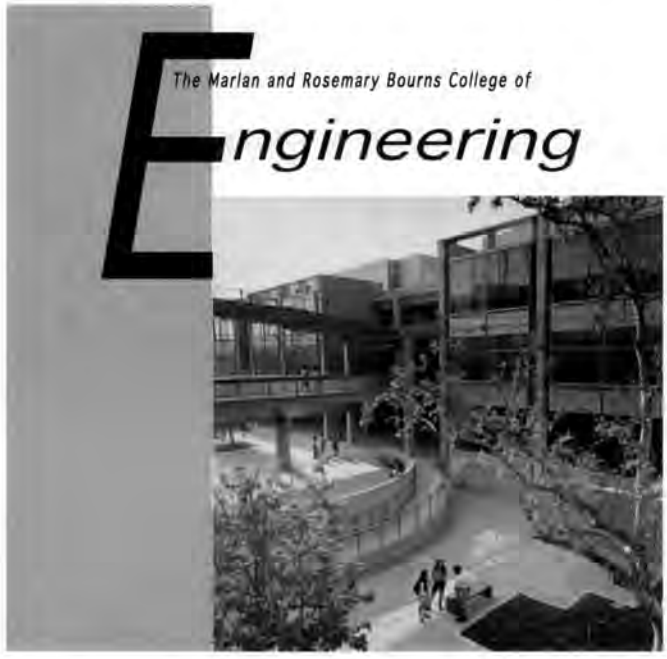
Admissions Officer • Chemical Engineering Department
5531 Boelter Hall • UCLA • Los Angeles, CA 90095-1592
Telephone at (310) 825-9063 or visit us at www.chemeng.ucla.edu

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

Visit us at our website:
http://www.engr.ucr.edu/chemical



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*

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

Ashok Mulchandani (McGill) *Biosensors, Environmental Biotechnology*

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

Akula Venkatram (Purdue) *Micrometeorology, Air Pollution Modeling*

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

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

Yushan Yan (CalTech) *Advanced Materials, Zeolite Thin Films, 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

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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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
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For further information, write

Director of Graduate Studies
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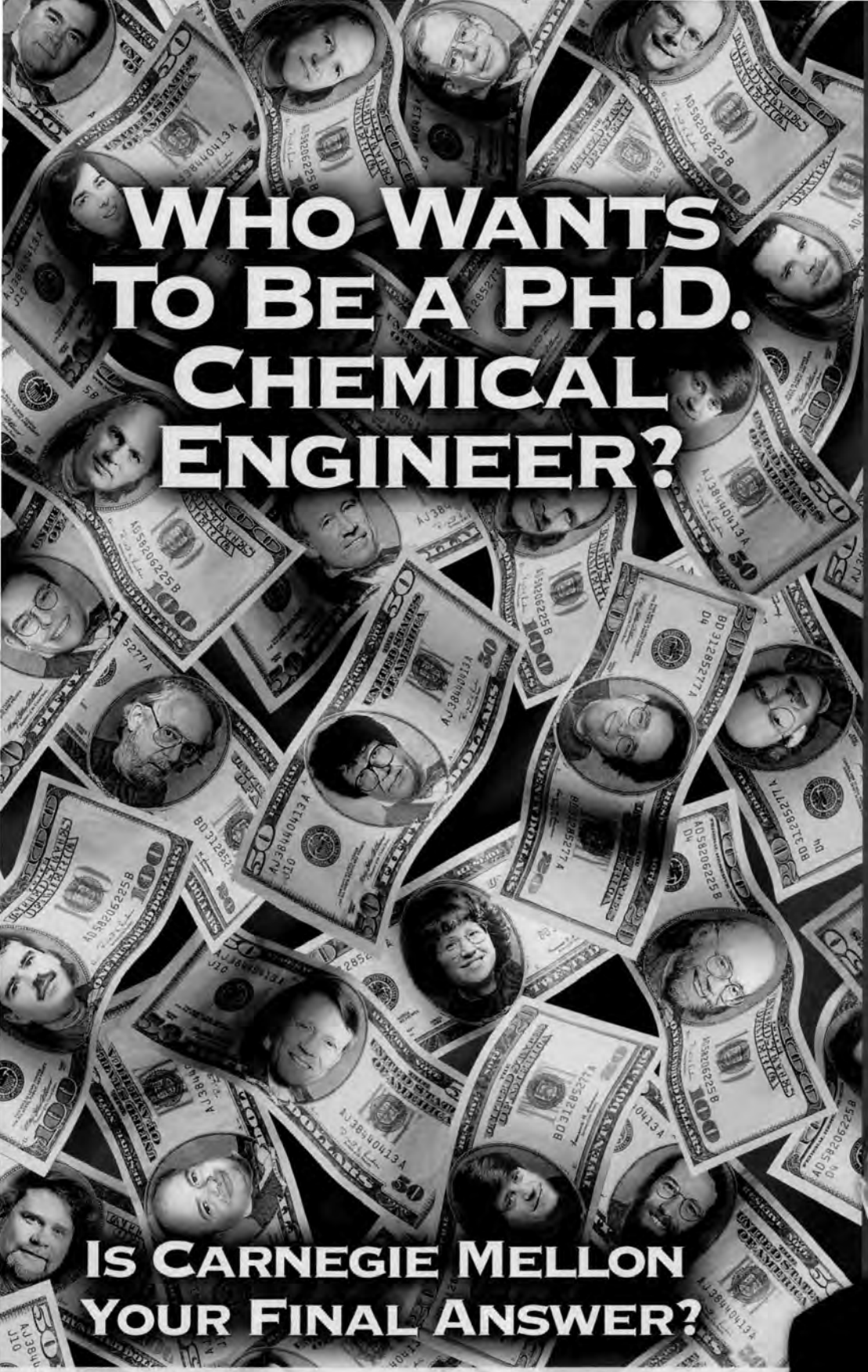

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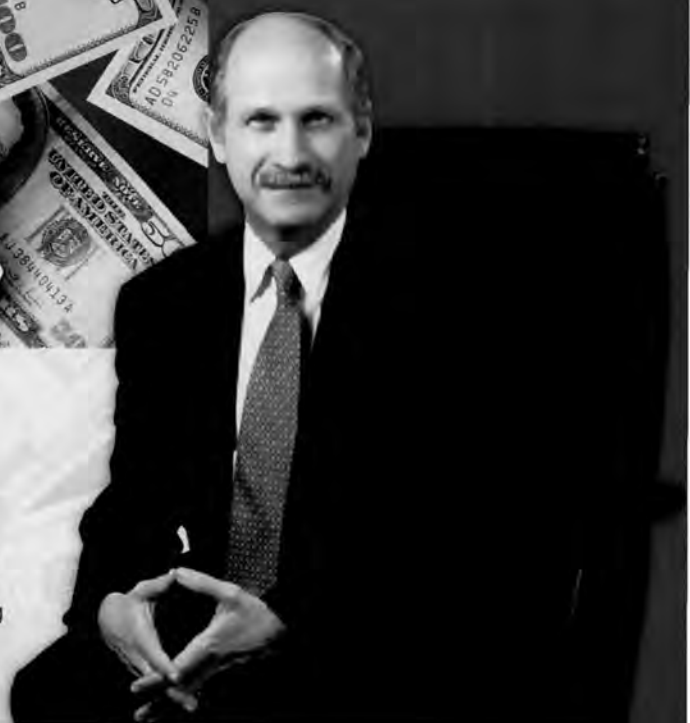

- **Department Home Page**
  www.cheme.cmu.edu
- **On-line Graduate Application**
  apply.cheme.cmu.edu
- **Contact Information**
  cheme-admissions+@andrew.cmu.edu
  412.268.2230

Graduate Degree Programs
- Doctorate
- Course option Masters
- Thesis option Masters

Research Thrust Areas
- Bioengineering
- Complex Fluids Engineering
- Envirochemical Engineering
- Process Systems Engineering
- Solid State Materials

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CASE WESTERN RESERVE UNIVERSITY

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

Faculty

John Angus
Robert Edwards
Donald Feke
Nelson Gardner
Jeffrey Glass
Howard Greene
Uziel Landau
Chung-Chiun Liu
J. Adin Mann
Philip Morrison
Syed Qutubuddin
Robert Savinell
Jesse Wainright

Students in the Department of Chemical Engineering are involved in state-of-the-art research. Here, two students make adjustments to a component of a prototype fuel cell.

Research Opportunities

- Fuel Cells and Portable Power
- Process Intensification
- Colloidal Phenomena and Microemulsions
- Electrochemical Engineering
- Biomedical Sensors
- Synthesis of Electronic Material
- Polymers and Interfacial Phenomena
- Thin Film Deposition
- Catalysis and Reactor Design
- Interfacial Transport and Molecular Electronics
- In Situ Diagnostics

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

Graduate Coordinator
Department of
Chemical Engineering
Case Western Reserve University
10900 Euclid Avenue
Cleveland, Ohio 44106-7217

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http://cheme.cwru.edu

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Faculty

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Rakesh Govind

Vadim Guliants

Daniel Hershey

Sun-Tak Hwang

Yuen-Koh Kao

Soon-Jai Khang

William Krantz

Jerry Y. S. Lin

Neville Pinto

Peter Smirniotis

Financial Aid Available

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

For Admission Information

Director, Graduate Studies
Department of 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

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Heterogeneous catalysis, environmental catalysis, zeolite catalysis, novel chemical reactors, modeling and design of chemical reactors

☐ **Environmental Research**
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☐ **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

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Thermodynamics, polymer blends and composites, high-temperature polymers, hydrogels, polymer rheology, computational polymer science

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

Chemical Engineering at The City College of New York-CUNY

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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

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

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

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

Irven Rinard: Process design methodology; Dynamic process simulation; Microreaction technology; Process control

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 & 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 Weinstain: Fluidization and multiphase flows; Multiphase chemical reactor analysis and design, multiphase reactor analysis & design

* National Academy of Sciences
∞ National Academy of Engineering
≤ American Academy of Arts and Sciences

ASSOCIATED FACULTY:

Jimmy Feng: (mechanical eng.)Liquid crystals
Joel Koplik: (physics) Fluid mechanics, molecular modeling, transport in randon media
Hernan Makse: (physics) Granular mechanics
Mark Shattuck: (physics) Experimental granular rheology; computational granular fluid dynamics; experimental spatio-temporal control of patterns.

Contact information:
Department of Chemical Engineering
City College of New York
Convent Avenue at 140th Street
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or

Graduate Coordinator
Chemical Engineering Dept.
Clemson University
Box 340909
Clemson, SC 29634-0909
Telephone 864-656-3055
Email: che@ces.clemson.edu

CHEMICAL ENGINEERING

CLEMSON UNIVERSITY

Research Areas

Bioseparations
Kinetics of Reactions
Catalysis
Engineering Fibers
Polymeric Films
Interfacial Engineering
Nanoscale Science
Polymers & Composites
Rheology
Supercritical Fluids
Water Remediation

Faculty

Charles H. Barron, Jr.
(D.Sc., Virginia)
David A. Bruce
(Ph.D., Georgia Tech)
Dan D. Edie
(Ph.D., Virginia)
Charles H. Gooding
(Ph.D., NC State)
James G. Goodwin, Jr.
(Ph.D., Michigan)
Graham M. Harrison
(Ph.D., Santa Barbara)
Douglas E. Hirt
(Ph.D., Princeton)
Scott M. Husson
(Ph.D., Berkeley)
S. Michael Kilbey II
(Ph.D., Minnesota)
Stephen S. Melsheimer
(Ph.D., Tulane)
Amod A. Ogale
(Ph.D., Delaware)
Richard W. Rice
(Ph.D., Yale)
Mark C. Thies
(Ph.D., Delaware)

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Dow 2000 Outstanding New Faculty Award
Dow 2000 Outstanding Teaching Award
NSF 2000 Early Career Development Award

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)
R.P. Elliott (Illinois Institute of Technology)
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.

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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

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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

Doug Gin
Polymers

Ryan Gill
Biotechnology

Christine M. Hrenya
Fluidization, Granular Systems, Fluid Mechanics

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

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)

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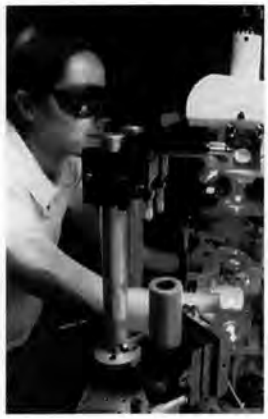

Evolving from its origins as a school of mining founded in 1873, CSM is a unique, highly-focused University dedicated to scholarship and research in materials, energy, and the environment.

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)**

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)**

Combustion
- **Flame chemistry (McKinnon, Dean)**
- **Fuels and emissions (Graboski, Dean)**
- **Reaction mechanisms (McKinnon, 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

RESEARCH IN . . .

- Advanced Process Control
- Biochemical Engineering
- Biomedical Engineering
- Chemical Thermodynamics
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- 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

Department of Chemical and Bioresource Engineering
Colorado State University
Fort Collins, CO 80523-1370

FACULTY

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

Rajiv Bhadra, Ph.D.
Rice University

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

◨ Biochemical Engineering and Biotechnology

James D. Bryers, Ph.D., Rice University (Joint Appointment)
Structure-Property Relations in Polymers and Composites Adhesion

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

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

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

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Pierre Bataille, Professor, Ph.D. (Montréal)
• Polymerization Processes • Physical and Mechanical Properties of Composites
E-mail: pierre.bataille@mail.polymtl.ca

Michael D. Buschmann, Associate Professor, P.Eng., Ph.D. (MIT)
• Tissue Engineering • Biomechanics • Cartilage Physiology • Arthritis Research
E-mail: mike@grbb.polymtl.ca

Pierre J. Carreau, Professor, P.Eng., Ph.D. (Wisconsin, Madison)
Head: Center on Applied Research on Polymers
(URL: www.crasp.polymtl.ca)
• Rheological Properties of Suspensions in Polymers and Polymer Blends • Modeling of Polymer Processing • Mixing of Non-Newtonian Fluids
E-mail: pierre.carreau@mail.polymtl.ca

Jamal Chaouki, Professor, Ph.D. (Polytechnique)
Head: Environmental and Biotechnological Process Engineering Research Centre
(URL:www.biopro.polymtl.ca)
• Chemical Reaction Engineering • Multiphase Reactors • Particle Tracking • Tomography • Fluidization of Powders
E-mail: chaouki@biopro.polymtl.ca

Claude Chavarie, Professor, P.Eng., Ph.D. (McGill)
Dean of Research
• Bioreactor Engineering • Animal Cell Culture • Plant Cell Culture
E-mail: claude.chavarie@mail.polymtl.ca

Louise Deschênes, Research Associate, Ph. D. (INRS-Eau)
Co-Chair NSERC Industrial Chair on Site Bioremediation
• Intrinsic Soil Bioremediation • Underground Water Treatment • Environmental Microbiology • Ecotoxicological Risk Assessment
E-mail: deschenes@biopro.polymtl.ca

Basil D. Favis, Professor, Ph.D. (McGill)
• Processing-Morphology-Property Relationships in Polymer Blends • Interface Characterization in Multiphase Systems
E-mail: favis@chimie.polymtl.ca

Miroslav Grmela, Senior Research Associate, Ph.D. (Prague)
• Thermodynamics of Irreversible Processes • Molecular Rheological Modelling • Flow of Viscoelastic Fluids • Polymer Processing
E-mail: grmela@chimie.polymtl.ca

Christophe Guy, Professor, P.Eng., Ph.D. (Polytechnique)
Department Chairman
• Natural Gas Technologies • Odors • Treatment of Solid Wastes and Emissions • Multiphase Reactors
E-mail: christophe.guy@mail.polymtl.ca

Mario Jolicoeur, Assistant Professor, P.Eng., Ph.D. (Polytechnique)
• Bioreactor Engineering • Mycorrhizal Fungi-Plant Symbiosis • Metabolic Engineering • Pharmaceutical Engineering
E-mail: mario.jolicoeur@polymtl.ca

Danilo Klvana, Professor, Ph.D. (Prague)
Head: Gas Technology Research Group
(URL: www.polymtl.ca/udr7.htm)
• Catalytic Gas-Solid Hydrogenation • Storage of Methane • Catalytic Combustion • Preparation of Catalysts and Electrocatalysts
E-mail: danilo.klvana@mail.polymtl.ca

Pierre G. Lafleur, Professor, P.Eng., Ph.D. (McGill)
Assistant Dean Academic
• Polymer Processing • Computer-Aided Design • Engineering and Manufacturing
E-mail: pierre.lafleur@mail.polymtl.ca

Robert Legros, Professor, P.Eng., Ph.D. (Surrey)
• Solid Waste Incineration • Fluidized-Bed Combustion • Fluidized-Bed Drying • Spouted Bed Hydrodynamics • Expanded Bed Bioseparation
E-mail: robert.legros@mail.polymtl.ca

Jean R. Paris, Professor, P.Eng., Ph.D. (Northwestern)
Head: Research Group on Pulp and Paper Science and Engineering
(URL: www.gresip.polymtl.ca)
• Process Design and Analysis • Process Integration • System Closure in Mechanical and Chemical Pulp Mills • Pinch Analysis • Process Simulation
E-mail: jparis@gpapetier.polymtl.ca

Michel Perrier, Professor, ing., Ph.D. (McGill)
• Dynamics and Control of Chemical and Biochemical Reactors • Dynamics and Control of Pulp and Paper Processes
(URL: www.urcpc.polymtl.ca/~perrier)
E-mail: michel.perrier@urcpc.polymtl.ca

Réjean Samson, Professor, Ph.D. (Laval)
NSERC Industrial Chair for Site Bioremediation
(URL: www.biopro.polymtl.ca/bioremediation)
• Environmental Biotechnology • Waste Treatment • Air Pollution
E-mail: samson@biopro.polymtl.ca

Henry P. Schreiber, Senior Research Associate, Ph.D. (Toronto)
• Composite Materials • Surface and Interface Polymer Properties • Microwave Plasma Surface Treatment
E-mail: schreiber@crasp.polymtl.ca

Amine Selmani, Associate Professor, Ph.D. (Montréal)
• Biocompatible Materials • Tissue Engineering
E-mail: selmani@chimie.polymtl.ca

Philippe Tanguy, Professor, P.Eng., Ph.D. (Laval)
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For further information, contact us

Department of Chemical Engineering, École Polytechnique, P.O. Box 6079 Station Centre-ville, Montréal, Québec, Canada H3C 3A7
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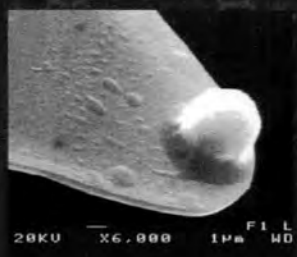

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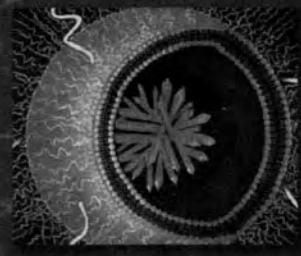

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Dr. Ronald W. Rousseau, Chair
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FACULTY

Kenneth Brezinsky, Professor and Head
Ph.D., City University of New York, 1978
E-Mail: Kenbrez@UIC.EDU

John H. Kiefer, Professor Emeritus
Ph.D., Cornell University, 1961
E-Mail: Kiefer@UIC.EDU

Andreas A. Linninger, Assistant Professor
Ph.D., Vienna University of Technology, 1992
E-Mail: Linninge@ uic.edu

G. Ali Mansoori, Professor
Ph.D., University of Oklahoma, 1969
E-Mail: Mansoori@UIC.EDU

Sohail Murad, Professor
Ph.D., Cornell University, 1979
E-Mail: Murad@UIC.EDU

Ludwig C. Nitsche, Associate Professor
Ph.D., Massachusetts Institute of Technology, 1989
E-Mail: LCN@UIC.EDU

John Regalbuto, Associate Professor
Ph.D., University of Notre Dame, 1986
E-Mail: JRR@UIC.EDU

Satish C. Saxena, Professor Emeritus
Ph.D., Calcutta University, 1956
E-Mail: Saxena@UIC.EDU

Stephen Szepe, Associate Professor
Ph.D., Illinois Institute of Technology, 1966
E-Mail: SSzepe@UIC.EDU

Christos Takoudis, Professor
Ph.D., University of Minnesota, 1982
E-Mail: Takoudis@UIC.EDU

Raffi M. Turian, Professor
Ph.D., University of Wisconsin, 1964
E-Mail: Turian@UIC.EDU

Lewis E. Wedgewood, Associate Professor
Ph.D., University of Wisconsin, 1988
E-Mail: Wedge@uic.edu

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For information and application forms write:

Department of Chemical Engineering

University of Illinois at Urbana-Champaign

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APPLICATIONS

Graduate Admissions Coordinator
Chemical and Environmental Engineering Department
Illinois Institute of Technology
10 W. 33rd Street • Chicago, IL 60616-3793
Phone: 312-567-3533; Fax: 312-567-8874
http://www.chee.iit.edu/ • e-mail: chee@iit.edu

FACULTY AND RESEARCH AREAS

Chairman • Hamid Arastoopour
Associate Chair for Undergraduate Affairs • Fouad Teymour
Associate Chair for Graduate Affairs • Satish Parulekar

Javad Abbasian; *separation processes, gas cleaning, air pollution*
Nader Aderangi; *unit operations, chemical processes*
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*
Nasrin R. Khalili; *evaluation of adsorption capacity of solid adsorbents in waste control, industrial waste management strategies*
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 ◆ V.M. Balasubramaniam
Michael Caracotsios ◆ Ellis Fields ◆ William Franek ◆ Ted Knowlton
Harold Lindahl ◆ Robert Lyczkowski ◆ Alex Nikolov
Ali Oskouie ◆ 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

Anthony Hines
U. of Texas-Austin 1973
Mass transfer/ Adsorption

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

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

For information and application:

THE UNIVERSITY OF IOWA

Graduate Admissions
Chemical and Biochemical Engineering
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Kansas State

James C. Hill
Washington

Peter J. Reilly
Pennsylvania

Glenn L. Schrader
Wisconsin

FACULTY RESEARCH AREAS OF EXPERTISE

Biochemical Engineering	Biomedical Engineering	Catalysis and Reaction	Energy and Environment	Materials	Process Design and Control	Transport and Thermodynamics	
●			●				Brown, Robert C.
		●					Doraiswamy, L.K.
		●				●	Fox, Rodney O.
●				●			Glatz, Charles E.
				●			Hebert, Kurt R.
						●	Hill, James C.
						●	Jolls, Kenneth R.
	●			●			Mallapragada, Surya K.
	●			●			Narasimhan, Balaji
				●			Otaigbe, Joshua U.
●							Reilly, Peter J.
	●				●		Rollins, Derrick K.
		●		●			Schrader, Glenn L.
	●					●	Seagrave, Richard C.
		●		●			Shanks, Brent H.
●	●						Shanks, Jacqueline V.
					●		Ulrichson, Dean L.
		●				●	Vigil, R. Dennis
			●				Wheelock, Thomas D.
				●			Youngquist, Gordon R.

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Thomas D. Wheelock
Iowa State

Kurt R. Hebert
Illinois

Joshua U. Otaigbe
Manchester

Brent H. Shanks
Cal Tech

Gordon R. Youngquist
Illinois

FOR MORE INFORMATION

Graduate Admissions Committee
Department of Chemical Engineering
Iowa State University
Ames, Iowa 50011
515-294-7643
Fax: 515-294-2689
chemengr@iastate.edu
www.iastate.edu/~ch_e

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Insect Cell Culture
Recombinant DNA Technology
Protein Folding and Aggregation
Michael J. Betenbaugh, PhD • University of Delaware

Equations of State • Statistical Thermodynamics
Solvent Replacement
Marc D. Donohue, PhD • University of California, Berkeley

Nanostructured Materials
Colloid/Protein Adsorption
Rheology of Suspensions
Jeffrey J. Gray, PhD • University of Texas at Austin

Biomaterials Synthesis
Controlled/Targeted Drug Delivery
Tissue Engineering
Justin S. Hanes, PhD • Massachusetts Institute of Technology

Biomaterials and Nanocomposite Materials
Macromolecular Transport
Rheology of Soft Materials
James L. Harden, PhD • University of California, Santa Barbara

Nucleation • Crystallization
Flame Generation of Ceramic Powders
Joseph L. Katz, PhD • University of Chicago

Fluid Mechanics in Medical Applications
Vascular and Cellular Biology
Thrombosis, Inflammation, Cancer Metastasis
Konstantinos Konstantopoulos, PhD • Rice University

Molecular Bioengineering
Protein Engineering • Molecular Evolution
Marc Ostermeier, PhD • University of Texas at Austin

Surfactant/Supercritical Fluid Phase Behavior
Computational Molecular Thermodynamics
Polymer/Protein Thermodynamics
Michael E. Paulaitis, PhD • University of Illinois

Interfacial Phenomena
Surfactant Transport Kinetics
Maragoni Effects
Kathleen J. Stebe, PhD • The City University of New York

Phase Transitions and Critical Phenomena
Polymer Systems Far from Equilibrium
Particle-Tracking Microrheology
Denis Wirtz, PhD • Stanford University

For further information contact:

Johns Hopkins University
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Department of Chemical Engineering
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Department of Chemical & Materials Engineering

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- Materials Synthesis
- Advanced Separation & Supercritical Fluids Processing
- Membranes & Polymers
- Aerosols

The Chemical Engineering Faculty

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*
W. Ho • *University of Illinois*
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:

Web: http://www.engr.uky.edu/cme E-mail: cme-admit@engr.uky.edu
Address: Department of Chemical & Materials Engineering
Director of Graduate Studies, Chemical Engineering
177 Anderson Hall • University of Kentucky • Lexington, KY 40506-0046
Phone (859) 257-8028 Fax (859) 323-1929

CHEMICAL ENGINEERING

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M.Sc. and Ph.D.

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Computer aided simulation and design

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Polymer engineering

Process modelling

Rheology

Polymer processing

Faculté DES SCIENCES ET DE GÉNIE

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Research Areas

Abdellatif Ait-Kadi
(Ph.D. École Polytechnique de Montréal)
aitkadi@gch.ulaval.ca
(418) 656-5222
- rheology and rheological modelling
- polymer processing
- engineering of composits

Mosto M. Bousmina
(Ph. D. École des Hauts Polymères, Strasbourg)
bousmina@gch.ulaval.ca
(418) 656-2769
- rheology and modelling
- polymer blends and processing
- polymer physics and engineering

Alain Garnier
(Ph.D. École Polytechnique de Montréal)
alain.garnier@gch.ulaval.ca
(418) 656-3106
- biochemical engineering
- animal cell culture
- virus and protein production

Suzanne Giasson
(Ph.D. University of Western Ontario and IFP, Paris)
sgiasson@gch.ulaval.ca
(418) 656-3774
- intermolecular and intersurface forces
- complex fluid systems, polymers, biomaterials
- nanorheology, nanotribology

Bernard Grandjean
(Ph.D. École Polytechnique de Montréal)
grandjean@gch.ulaval.ca
(418) 656-2859
- catalytic membrane reactors
- neural network, genetic algorithm
- process modelling

Serge Kaliaguine
(D. Ing. IGC Toulouse)
kaliagui@gch.ulaval.ca
(418) 656-2708
- zeolites, mesostructured materials, perovskites
- catalytic membranes and fuel cells
- industrial catalysis

René Lacroix
(Ph.D. Université Laval)
lacroix@gch.ulaval.ca
(418) 656-3564
- finite element method
- numerical simulation of cooling processes
- thermo-electrical simulation

Faïçal Larachi
(Ph.D. INPL Nancy)
flarachi@gch.ulaval.ca
(418) 656-3566
- multiphase reactors
- wet oxidation
- flow instrumentation

Anh LeDuy
(Ph.D. University of Western Ontario)
leduy@gch.ulaval.ca
(418) 656-2634
- biochemical and microbial processes
- biokinetics

Jean-Claude Méthot
(Ph.D. Université Laval)
Chairman of the Department
methot@gch.ulaval.ca
(418) 656-2539

Denis Rodrigue
(Ph.D. Université de Sherbrooke)
drodrigu@gch.ulaval.ca
(418) 656-2903
- transport phenomena
- rheology
- polymeric foams

Christian Roy
(Ph.D. Université de Sherbrooke)
croy@gch.ulaval.ca
(418) 656-7406
- vacuum pyrolysis
- vapor phase membranes
- industrial process engineering

Abdelhamid Sayari
(Ph.D. Université de Tunis/Lyon)
sayari@gch.ulaval.ca
(418) 656-3563
- heterogeneous catalysis
- zeolites and molecular sieves
- inorganic materials

Additional information and Applications may be obtained from :
Head of Graduate Programs
Mosto M. Bousmina
Département de Génie chimique
Pavillon Adrien-Pouliot, Université Laval
Québec (QC) Canada G1K 7P4
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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
Christos Georgakis (University of Minnesota) ■ batch control • model predictive control • identification • statistical process control
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
Anthony M. Lowman (Purdue University) ■ biomaterials • intelligent drug delivery 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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Dr. James T. Hsu, Chairman • Graduate Committee
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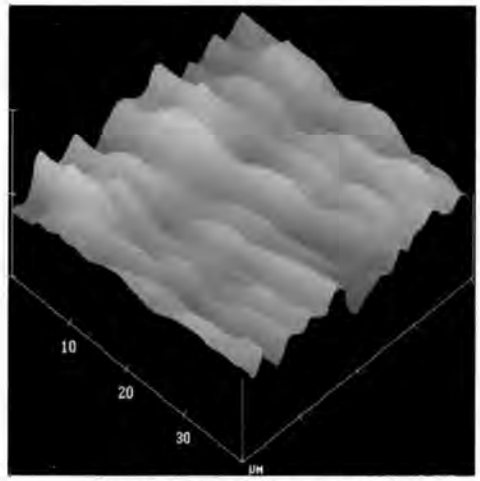

Atomic Force Microscopy of Deformed High Density Polyetheylene

Faculty

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

F.F. Farshad, PhD, University of Oklahoma, AL (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

Corrosion Research Center • Dr. J.D. Garber, Director

Center for Metals, Polymers and Composites Research • Dr. R.D.K. Misra, Director

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Research Areas

- **Corrosion**
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  - Hydrogen-Induced Cracking
- **Materials: Structure/Processing/Performance**
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  - Deformation Behavior of Polymers and Composites
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  - Drop Coalescence
  - Liquid Spreading
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  - Chemical Reactor Design, Stability and Dynamics
  - Process Simulation and Design

Department of Chemical Engineering
University of Louisiana at Lafayette
PO Box 44130
Lafayette, LA 70504-4130

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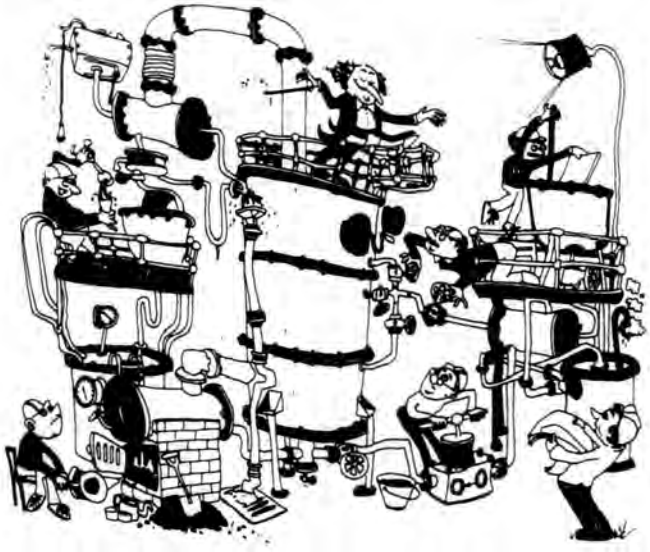

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Baton Rouge is the state capitol and home of the major state institution for higher education — LSU. Situated in the Acadian region, Baton Rouge blends the Old South and Cajun Cultures. Baton Rouge is one of the nation's busiest ports and the city's economy rests heavily on the chemical, oil, plastics, and agricultural industries. The great outdoors provide excellent recreational activities year-round, especially fishing, hunting, and water sports. The proximity of New Orleans provides for superb nightlife, especially during Mardi Gras. The city is also only two hours away from the Mississippi Gulf Coast, and four hours from either Gulf Shores or Houston.

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Louisiana State University
Baton Rouge, LA 70803
Telephone: 1(800) 256-2084 FAX: (225) 578-1476
e-mail: gradcoor@che.lsu.edu

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Fluid-Solid Reactions, Hazardous Waste Treatment

M.A.HENSON (Ph.D., UC Santa Barbara)
Nonlinear Process Control, Neural Networks

M.A. HJORTSØ (Ph.D., University of Houston)
Biochemical Reaction Engineering, Applied Math

F.C. KNOPF (Ph.D., Purdue University)
Supercritical Fluid Extraction, Ultrafast Kinetics

R.W. PIKE (Ph.D., Georgia Institute of Technology)
Fluid Dynamics, Reaction Engineering, Optimization

E.J. PODLAHA (Ph.D., Columbia University)
Electrical Phenomena, Alloy and Composite Materials

D.D. REIBLE (Ph.D., California Institute of Technology)
Environmental Transport, Transport Modeling

A.M. STERLING (Ph.D., University of Washington)
Transport Phenomena, Combustion

L.J. THIBODEAUX (Ph.D., Louisiana State University)
Chemodynamics, Hazardous Waste Transport

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Transport and Reaction in Porous Media

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Faculty and Research Areas

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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*
Panagiotis Dimitrakopoulos (Illinois-Urbana) • *Biofluid mechanics, biophysics and microrheology*
Sheryl H. Ehrman (UCLA) • *Aerosol and nanoparticle technology*
James W. Gentry (Texas-Austin) • *Aerosol science and engineering*
Sandra C. Greer (Chicago) • *Physical chemistry, polymer science, biomacromolecules, phase equilibria*
Michael T. Harris (Tennessee) • *Nanoparticle technology, colloids and interfacial phenomena*
Maria I. Klapa (MIT) • *Metabolic engineering, bioinformatics, modeling of biological networks*
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Thomas J. McAvoy (Princeton) • *Process control, fault detection*
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Srinivasa R. Raghavan (N.C. State) • *Polymers, colloids, complex fluids, self-assembly*
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William A. Weigand (IIT) • *Biochemical engineering, bioprocess control and optimization*
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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

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McMaster University,
Hamilton, Ontario Canada L8S 4L7
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Fax 905-521-1350

e-mail: chemeng@mcmaster.ca
http://www.chemeng.mcmaster.ca

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East Lansing, Michigan 48824-1226

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  Biochemical and Food Engineering, Bioadhesion, Engineering Pedagogy
- **B.E. DALE**, Chairperson • *Ph.D., 1979, Purdue University*
  Biochemical Engineering, Biobased Industrial Products, Biomass Conversion, Life Cycle Analysis
- **L.T. DRZAL** • *Ph.D., 1974, Case Western Reserve University*
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  Kinetics, Catalysis, Reactions in Plasmas, Polymerization Reactions, Composite Processing, Biomass Conversion, Reaction Engineering
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  Polymer Rheology, Processing of Polymer Blends and Composites, Computational Methods
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  Process Dynamics of Environmental Systems, Adsorption in Porous Materials, Statistical Themodynamics and Molecular Simulation
- **C.T. LIRA** • *Ph.D., 1986, University of Illinois at Urbana-Champaign*
  Thermodynamics and Phase Equilibria of Complex Systems, Adsorption, Supercritical Fluid Studies
- **D.J. MILLER** • *Ph.D., 1982, University of Florida*
  Kinetics and Catalysis, Reaction Engineering, Catalytic Conversion of Biomass-Based Materials
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  Colloid and Interfacial Science: Colloid Stability, Adsorption of Proteins, Receptor-Ligand Interactions at the Liquid-Liquid Interface, Micellar Solubilization
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Bruce A. Barna: Professor
PhD, New Mexico State, 1985

Demixing-polymerization, polymer materials
Gerard T. Caneba; Associate Professor
PhD, California-Berkeley, 1985

Process control, neural networks, fuzzy logic control
Tomas B. Co; Associate Professor
PhD, Massachusetts-Amherst, 1988

Chemical process safety
Daniel A. Crowl; Professor, Herbert Henry Dow Chair of Chemical Process Safety; PhD, Illinois, 1975

Excited state chemistry and transport processes
Edward R. Fisher; Professor
PhD, Johns Hopkins, 1965

Environmental reaction engineering
Jason M. Keith; Assistant Professor
PhD, University of Notre Dame, 2000

Process control, energy systems
Nam K. Kim; Associate Professor
PhD, Montana State, 1982

Polymers, composites
Julia A. King; Associate Professor
PhD, Wyoming, 1989

Polymer rheology, flow instabilities, complex fluids
Faith A. Morrison; Associate Professor
PhD, Massachusetts-Amherst, 1988

Catalysis, ceramic processing, reactor design
Michael E. Mullins; Interim Chair
PhD, Rochester, 1983

Chemical process safety
Anton J. Pintar; Associate Professor
PhD, Illinois Institute of Technology, 1968

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E. Bart; *New York University*
C. Gogos; *Princeton University*
T. Greenstein; *New York University*
D. Hahn; *Agri. Univ. of Wageningen (Netherlands)*
D. Hanesian; *Cornell University*
M. Huang; *University of Massachusetts*
K. Hyun; *University of Missouri-Columbia*
H. Kimmel; *City University of New York*
D. Knox; *Rensselaer Polytechnic Institute*
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R. Pfeffer; *New York University*
K. Sirkar; *University of Illinois-Urbana*
S. Sofer; *University of Texas*
R. Tomkins; *University of London (UK)*
J. Wu; *University of Delaware*
M. Xanthos; *University of Toronto (Canada)*

For further information contact:

Dr. Reginald P.T. Tomkins, Department of Chemical Engineering
New Jersey Institute of Technology
University Heights
Newark, NJ 07102-1982

Phone: (973) 596-5656 Fax: (973) 596-8436
E-mail: tomkinsr@adm.njit.edu

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Faculty	Research Areas
Plamen Atanasov	• Electroanalytical Chemistry, Biomedical Engineering
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
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
Chemical and Nuclear Engineering • 209 Farris Engineering Center • Albuquerque, NM 87131-1341
505 277 5431 Phone • 505 277 5433 Fax • chne@unm.edu

NEW MEXICO STATE UNIVERSITY

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
- **Sarah W. Harcum,** Associate Professor, *University of Maryland-College Park*
  Biotechnology, Biochemical Engineering, Environmental 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,** Assistant 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
- **Rudi V. Roubicek,** Professor Emeritus, *Technical University of Prague*
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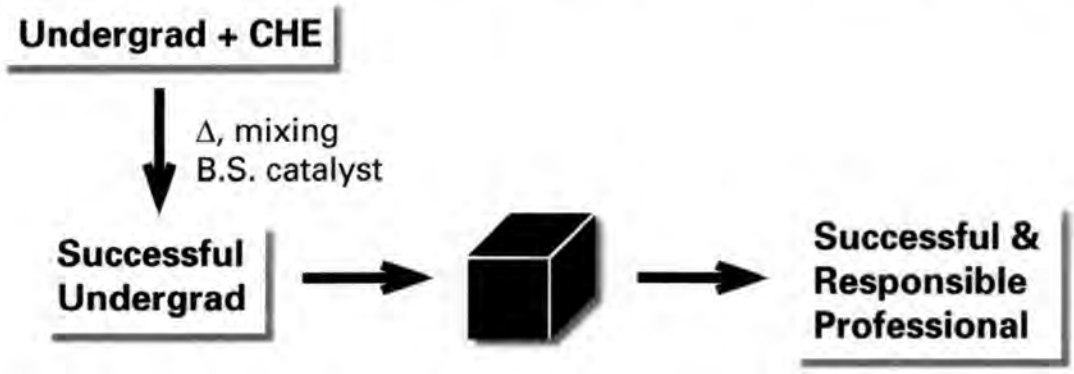

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Reaction Engineering - *DeSimone, Fedkiw, Haugh, Kelly, Lamb, Lim, Ollis, Parsons, Peretti, Roberts.*

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Chemical Engineering at

Northwestern University

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

Linda J. Broadbelt, Ph.D., 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

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., Minnesota, 1983
Polymer science, membranes

For information and application to the graduate program, write

Director of Graduate Admissions
Department of Chemical Engineering
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and Applied Science
Northwestern University
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H.-Chia Chang
Davide A. Hill
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David T. Leighton, Jr.
Edward J. Maginn
Mark J. McCready
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University of Notre Dame
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Combinatorial Materials Synthesis
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Electrochemical Processes
Environmentally Conscious Design
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Inorganic Membranes
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  Process Systems Engineering, Industrial Ecology
- **Robert S. Brodkey,** *Wisconsin*
  Turbulence Motion, Mixing, Kinetics, Image Processing/Analysis, Reactor Design and Rheology
- **Jeffrey J. Chalmers,** *Cornell*
  Immunomagnetic Cell Separation, Effect of Hydrodynamic Forces on Cells, Interfacial Phenomena and Cells, Bioengineering, Biotechnology
- **L.S. Fan,** *West Virginia*
  Fluidization, Particle Technology, Particulates Reaction Engineering
- **Martin Feinberg,** *Princeton*
  Mathematics of Complex Reactors
- **Kurt W. Koelling,** *Princeton*
  Polymer Processing, Rheology of Complex Fluids
- **Isamu Kusaka,** *CalTech*
  Nucleation
- **L. James Lee,** *Minnesota*
  Polymer Processing and Composite Manufacturing
- **Umit S. Ozkan,** *Iowa State*
  Heterogeneous Catalysis, Kinetics, Catalytic Materials
- **James F. Rathman,** *Oklahoma*
  Colloids, Interfaces, Surfactants, Molecular Self-Assembly
- **David L. Tomasko,** *Illinois-Urbana*
  Separations, Molecular Thermodynamics and Materials Procesing in Supercritical Fluids
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Chemical Engineering

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Research Areas

Multiphase Flow and Associated Corrosion
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Aerosol Science and Technology
Process Control
Separations
Energy and Environmental Engineering
Thin Film Materials
Chemical Reaction Engineering
Wastewater Treatment
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

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)*
W. Paul Jepson *(Ph.D., Heriot-Watt, 1980)*
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)*
Ben J. Stuart *(Ph.D., Rutgers, 1995)*
Valerie L. Young *(Ph.D., Virginia Tech., 1992)*

For More Information Contact:

Director of Graduate Studies
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Faculty & Research Interests

- **Miguel J. Bagajewicz**, Professor • *process plant simulation & data reconciliation • design of heat/mass-exchange networks for waste minimization applications • mathematical background, algorithm development & process design applications of optimization theory • high temperature fuel-gas cleaning reactors • modeling of fluid-solid diffusion-reaction problems*
- **Billy L. Crynes**, Professor • *modeling of hydrocarbon pyrolysis • surface effects during pyrolysis of hydrocarbons*
- **Brian P. Grady**, Associate Professor • *multiphase & block copolymers • ion-containing polymers • x-ray, neutron & light scattering • biodegradable and bioabsorbable polymers • orientation and orientation mechanisms in polymers*
- **Roger G. Harrison, Jr.**, Associate Professor • *production of proteins & peptides using recombinant DNA technology • separation & purification of biochemicals • enzyme reactors • protein engineering • drug delivery systems • applications of biotechnology to waste treatment*
- **Jeffrey H. Harwell**, Conoco/DuPont Professor • *tertiary oil recovery • unconventional low energy separation pro-cesses • mass transfer • dynamics of multicomponent mass transfer processes • surface phenomena • adsorption kinetics*
- **Lloyd L. Lee**, C. M. Sliepcevich Professor • *thermodynamics • molecular transport theory • statistical mechanics • structured liquids • Monte Carlo & molecular dynamics studies • conformal solution theory • natural gas properties • polar fluids, ionic solutions, & molten salts • surface adsorption • turbulent flow*
- **Lance L. Lobban**, Winn Chair & Director • *catalytic reaction rate mechanisms & modeling • partial oxidation of hydrocarbons • fuel cells*
- **Richard G. Mallinson**, Professor • *chemical reaction engineering • polymerization • synthetic and alternative fuels*
- **Mathias U. Nollert**, Associate Professor • *biomedical engineering • cellular metabolism and transport • fluid transport • fluid mechanics*
- **Edgar A. O'Rear, III**, Professor • *catalysis • surface chemistry & physics • kinetics • blood trauma associated with medical devices • biorheology • organic chemistry • coal technology*
- **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**, Professor • *heterogeneous catalysis, reaction engineering & kinetics • design of catalysts for pollutant abatement • transport & adsorption in porous materials • physical chemistry of surfaces • characterization of ceramic supports*
- **Melissa M. Rieger**, Assistant Professor • *electrochemical phenomena and electrochemical engineering • alternative energy sources • material systems and electrochemical processes in microelectronic processing • optoelectronic integration into silicon electronics • electrochemical behavior of polymeric materials • photochemical etching of silicon carbide • porous silicon luminescence*
- **John F. Scamehorn**, Asahi Glass Chair • *surface & colloid science • tertiary oil recovery • detergency • membrane separations • adsorption • pollution control • polymers • paper & plastics deinking*
- **David W. Schmidtke**, Assistant Professor • *design & development of new analytical devices & technologies for medical therapy • biosensors • cell adhesion • high speed/high resolution video microscopy of fluid mechanics in the blood stream •*
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Karen A. High (Ph.D., Pennsylvania State University)
Martin S. High (Ph.D., Pennsylvania State University)
A.J. Johannes (Ph.D., University of Kentucky)
Randy Lewis (Ph.D., Massachusetts Institute of Technology)
Sundarajan V. Madihally (Ph.D., Wayne State University)
R. Russell Rhinehart (Ph.D., North Carolina State University)
D. Alan Tree (Ph.D., University of Illinois)
Jan Wagner (Ph.D., University of Kansas)
James R. Whiteley (Ph.D., Ohio State University)

Research Areas

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Biomedical Enginering
CFD
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Environmental Engineering
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Hazardous Wastes
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Kinetics
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Polymers
Process Control
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For more information contact
Dr. Khaled A.M. Gasem
School of Chemical Engineering
Oklahoma State University
Stillwater, OK 74078-5021
gasem@okstate.edu

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  Reaction Engineering, High-Temperature Materials
- **M. D. Koretsky**
  Electronic Materials Processing
- **K. L. Levien**
  Process Optimization and Control
- **J. McGuire**
  Protein Adsorption, Biofilm Development
- **C. McConica**
  Gas Solid Kinetics, Semiconductor Processing
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Department of Chemical Engineering
311A Towne Building
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Philadelphia, Pennsylvania 19104-6393

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Stuart W. Churchill ■
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Russell J. Composto ■
Polymeric materials science, surface and interface studies

Scott L. Diamond ■
Endothelial cell mechano-biology, drug and gene delivery, biotransport phenomena

Dennis Discher ■
Cell and molecular mechanics, biomembrane and bipolymer mesostructures and functions

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

Raymond J. Gorte ■
Heterogeneous catalysis, supported metals, 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

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

Henry C. Foley *(Penn State)*—Nanoporous Materials, Heterogeneous Catalysis, Adsorption and Permeation

Seong Han Kim *(Northwestern)*—Nano-tribology and nano-materials

Costas D. Maranas *(Princeton)*—Computational Chemistry, Bioinformatics, Supply Chain Optimization

Janna Maranas *(Princeton)*—Molecular Simulation, Polymers, Thermodynamics, Network Glasses

Themis Matsoukas *(Michigan)*—Aerosol Processes, Colloidal Particles, Ceramic Powders

R. Nagarajan *(SUNY at Buffalo)*—Colloid and Polymer Science

Joseph M. Perez *(Penn State)*—Tribology, Lubrication

Michael Pishko *(Texas A&M)*—Bio-materials, Bio-sensing, and Tissue Engineering

Jonathan Phillips *(Wisconsin)*—Heterogeneous Catalysis, Surface Science

John M. Tarbell *(Delaware)*—Cardiovascular Fluid Mechanics and Mass Transfer, Artificial Heart

James S. Ultman *(Delaware)*—Physiological Transport Processes, Respiratory Mass Transfer

M. Albert Vannice *(Stanford)*—Heterogeneous Catalysis

Darrell Velegol *(Carnegie Mellon)*—Colloidal Systems, Colloidal Particle Interactions

James S. Vrentas *(Delaware)*—Transport Phenomena, Applied Mathematics, Diffusion in Polymers, Rheology

Chemical Engineering
at the University of Pittsburgh

RESEARCH AREAS	FACULTY	
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• Artificial Organs	Mohammad M. Ataai	Eric J. Beckman
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• Catalyst Deactivation	Vladimir Kovalchuk	John W. Tierney
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• Contaminated Soil Cleanup	Badie I. Morsi	
• Stack Gas Cleanup		
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• Interfacial Behavior	J. Thomas Lindt	Krzysztof Matyjaszewski (Adjunct)
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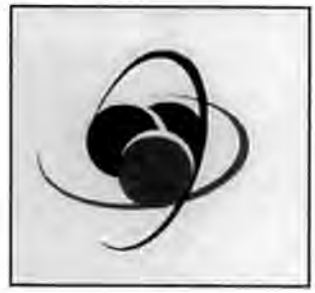
• Polymer Processing		
Multi-Scale Modeling		
• Molecular Modeling	Anna C. Balazs	J. Karl Johnson
• Polymer-Fluid Interactions	Joseph J. McCarthy	Robert S. Parker
• Process Modeling & Control		
• Particulate Systems Transport		



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

Information on Fellowships and Applications:

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Chemical and Petroleum Engineering
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University of Pittsburgh
Pittsburgh, PA 15261

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Faculty

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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**
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  - *Systems Modeling and Optimization*
- **Biotechnology**
  - *Biomaterials*
  - *Metabolic Engineering*
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  - *Mathematical Biology*
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  - *Aerosol Physics and Chemistry*
  - *Atmospheric, Groundwater, and Soil Chemistry*
  - *Art and Infrastructure Conservation*
- **Materials: Synthesis/Processing/Structure/Properties**
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  - *Biomimetic Processing*
  - *Ceramics*
  - *Colloidal Dispersions*
  - *Complex Fluids*
  - *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

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or email: chegrad@princeton.edu

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CHEMICAL ENGINEERING

PURDUE UNIVERSITY

FACULTY

Ronald P. Andres
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Gary E. Blau
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David S. Corti
W. Nicholas Delgass
Roger E. Eckert
Elias I. Franses
Robert E. Hannemann
Hugh W. Hillhouse
R. Neal Houze
David P. Kessler
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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
Bioprocess 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 and Ceramic Materials
Process Systems Engineering
Separation Processes
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For More Information

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

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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
Associate Department Chair
Thermodynamics; equations of state; phase equilibria

Elmar R. Altwicker, altwie@rpi.edu
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
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

Howard Littman, littmh@rpi.edu
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

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)*
- **Nikolaos V. Mantzaris** *(Minnesota, 2000)*
- **Lary V. McIntire**° *(Princeton, 1970)*
- **Antonios G. Mikos**° *(Purdue, 1988)*
- **Clarence A. Miller** *(Minnesota, 1966)*
- **Matteo Pasquali** *(Minnesota, 2000)*
- **Mark A. Robert** *(Swiss Fed. Inst. Tech., 1980)*
- **Ka-Yin San**° *(Caltech, 1984)*
- **Jennifer L. West**° *(Texas, 1996)*
- **Michael S. Wong** *(MIT, 2000)*
- **Kyriacos Zygourakis** *(Minnesota, 1981)*

† *Emeritus Faculty*
° *Joint with Bioengineering*

THE UNIVERSITY

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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

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Chemical Engineering Department, MS-362
Rice University
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S. H. CHEN, Ph.D. 1981, Minnesota
Polymer Science and Engineering • Organic Materials for Optics and Photonics • Molecular Dynamics Simulation

E. H. CHIMOWITZ, Ph.D. 1982, Connecticut
Critical Phenomena • Statistical Mechanics of Fluids • Computer-Aided Design

D. R. HARDING, Ph.D. 1986, Cambridge (England)
Chemical Vapor Deposition • Mechanical and Transport Properties • Advanced Aerospace Materials

S. D. JACOBS, Ph.D. 1975, Rochester
Optics, Photonics, and Optoelectronics • Magnetorheology • Optics Manufacturing

J. JORNE, Ph.D. 1972, California (Berkeley)
Electrochemical Engineering • Microelectronics Processing • Theoretical Biology

R. H. NOTTER, Ph.D. 1969, Washington (Seattle) M.D. 1980, Rochester
Biomedical Engineering • Lung Surfactant • Molecular Biophysics

L. J. ROTHBERG, Ph.D. 1984, Harvard
Organic Materials and Device Sciences • Light-Emitting Diodes • Thin Film Transitors

Y. SHAPIR, Ph.D. 1981, Tel Aviv (Israel)
Critical Phenomena • Transport in Disordered Media • Scaling Behavior of Growing Surfaces

S. V. SOTIRCHOS, Ph.D. 1982, Houston
Reaction Engineering • Transport and Reaction in Porous Media • Processing of Ceramic Materials and Composites

J. H. D. WU, Ph.D. 1987, M.I.T.
Biochemical Engineering • Fermentation • Biocatalysis • Bone Marrow Tissue Engineering • Genetic and Protein Engineering

H. YANG, Ph.D. 1998, Toronto
Nanostructured Materials • Magnetic Nanoparticles • Mesoporous Solids • Micro- and Nanofabrication • Materials and Structures for Photonics and Biophotonics

M. YATES, Ph.D. 1999, Texas (Austin)
Colloids and Interfaces • Materials Synthesis in Microemulsions • Nanoparticle/Polymer Composites • Supercritical Fluids • Microencapsulation

For further information and application, write

Graduate Admissions • Department of Chemical Engineering
University of Rochester • Rochester, New York 14627

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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

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RUTGERS

Graduate Program in

Chemical & Biochemical Engineering

Research Areas

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

Faculty

- **Helen M. Buettner,** Associate Professor, Associate Dean for Graduate Education and Research; Ph.D., University of Pennsylvania, 1987 • *Applied neurobiology, cell motility, cell-substrate interactions, crystallization of pharmaceuticals*
- **Yee C. Chiew,** Professor; University of Pennsylvania, 1984 • *Statistical thermodynamics, microscopic structures of fluids and particle systems, interfacial phenomena*
- **Alkis Constantinides,** Professor and Chair; 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*
- **Brian A. Newman,** Professor; Ph.D., Bristol, 1966 • *Structure and morphology of electroactive polymers; X-ray diffraction studies of polymers; high-pressure polymer physics*
- **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*
- **Carlos B. Rosas,** Visiting Professor and Administrative Director, Pharmaceutical Engineering Program; M.E., Stevens Institute of Technology, 1968 • *Fine chemicals, pharmaceuticals, and biologicals*
- **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
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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 undergraduate and graduate programs that provide stimulating and challenging learning experiences. As the sole degree-granting institution in chemical and environmental engineering in Singapore, the Department has a total enrollment of over 1,300 students. About 50 students are enrolled in the PhD program. The increase in student numbers in recent years also reflects the opportunities in the rapidly growing chemical process industry in the Asia-Pacific region.

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RESEARCH AREAS

CHEMICAL ENGINEERING FUNDAMENTALS
Biochemical & Biomedical Engineering
Interfacial Phenomena
Reaction Engineering
Separation & Purification
Thermodynamics
Transport Processes

MATERIALS & DEVICES
Advanced Catalytic & Crystalline Materials
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Sensors & Electrochemical Devices
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Process Optimization

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- Master of Science (Chemical 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

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Contact Us At:

Department of Chemical & Environmental Engineering
National University of Singapore
4 Engineering Drive 4 Singapore 117576
Tel: (65) 874-8076 • Fax: (65) 779-1936
E-mail: chegohsp@nus.edu.sg • http://www.chee.nus.edu.sg

Department of Chemical Engineering

UNIVERSITY OF SOUTH CAROLINA

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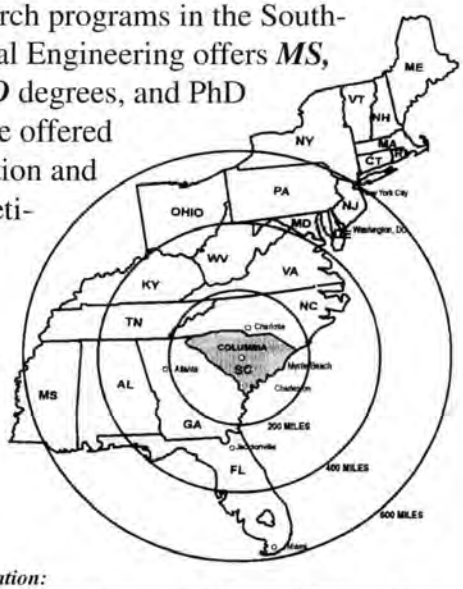

For further information:

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*
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
Batteries and Fuel Cells
Colloids and Interfaces
Composite Materials
Corrosion Engineering
Crossflow Filtration
Electrochemistry
Heterogeneous Catalysis
Molecular Simulations
Nanotechnology
Numerical Methods
Pollution Prevention
Process Control
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Chemical Engineering

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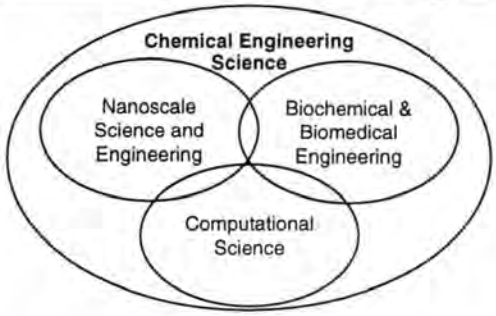

Faculty

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*
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, and The Institute for Lasers, Photonics, and Biophotonics

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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.

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Faculty

R. Blanks (PhD, University of California at Berkeley)

G.B. DeLancey (PhD, University of Pitsburgh)

D. M. Kalyon (PhD, McGill University)

S. Kovenklioglu (PhD, Stevens Institute of Technology)

A Lawal (PhD, McGill University)

F. Yang (PhD, University of Pittsburgh)

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Wastewater Treatment

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Stevens Institute of Technology
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For additional information, contact:
Chemical, Biochemical, and Materials Engineering Department
Stevens Institute of Technology
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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
Phone: (865) 974-2421
E-mail: *cheinfo@utk.edu*
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
Joel W. Barlow, Ph.D., U. of Wisconsin, 1970 • polymer blends, properties, processing
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, 1979 • electronic materials chemistry, surface science
R. Bruce Eldridge, Ph.D., U. of Texas, 1986 • separations research
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
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- & nanosctructured materials
C. Buddie Mullins, Ph.D., Caltech, 1990 • surface science, molecular beams, semiconductor thin-film growth
Donald R. Paul, Ph.D., U. of Wisconsin, 1965 • polymer blends, membranes, barrier materials
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
Mukul M. Sharma, Ph.D., U. of Southern Cal., 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

Address inquiries to: Graduate Advisor • Department of Chemical Engineering • University of Texas • Austin, TX 78712-1062
Phone: 512/471-6991 • Fax: 512/471-7824 • utgrad@che.utexas.edu • www.che.utexas.edu

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RESEARCH AREAS

Biochemical Engineering/Bioprocessing ■ Biomedical/Genetic/Metabolic Engineering ■ Composite Materials and Asphalts ■ Environmental Remediation/Pollution Prevention ■ Gas Sweetening Interfacial Transport ■ Kinetics, Catalysis and Reaction Engineering ■ Microelectronic Materials ■ Molecular Simulations ■ Polymers ■ Process Control/Computer-Aided Process Design and Modeling ■ Separations/Adsorption/Ion Exchance ■ Supercritical Phenomena/Technology ■ Thermodynamics

For More Information

Graduate Admissions Office • Department of Chemical Engineering • Dwight Look College of Engineering

Texas A&M University • College Station, Texas 77843-3122

Phone (979) 845-3361 • Website http://www-chen.tamu.edu

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

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
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

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

T.A. Good, Ph.D. • University of Wisconsin-Madison, 1996
Biomedical Engineering, Cellular Engineering

K.R. Hall, Ph.D. • University of Oklahoma, 1967
Jake and Sarah 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

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., U. of Texas at Austin*
Membrane Separations, Bioseparations

Kenneth J. DeWitt, 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., U. of Central Florida*
Drinking Water Biostability, Bacterial Regrowth Potential, Membrane Treatment

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*
Biofilms and Bioremediation

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

G. Glenn Lipscomb, Associate Professor
Ph.D., U. of California,Berkeley
Membrane Separations, Polymer Science & Engineering

Arunan Nadarajah, Associate Professor • *Ph.D., University of Florida*
Transport Phenomena, Protein Crystallization

Bruce E. Poling, Professor • *Ph.D., University of Illinois*
Thermodynamics & Physical Properties

Constance A. Schall, Assistant Professor • *Ph.D., Rutgers University*
Enzyme Kinetics, Crystallization, Paraffin Deposition

Sasidhar Varanasi, Professor • *Ph.D., State U. of New York at Buffalo*
Colloidal & Interfacial Phenomena, Enzyme Kinetics, Hydrogels

The *Chemical & Environmental Engineering Department* at the University of Toledo offers a graduate program leading to both M.S. and Ph.D. degrees. We recently moved to state-of-the-art facilities in Nitschke Hall and are experiencing a period of rapid growth. Our dynamic, young faculty offer a variety of research opportunities in contemporary areas of engineering science.

<u>*Send Inquiries To:*</u>

Academic Coordinator
Chemical & Environmental Engineering
University of Toledo
3048 Nitschke Hall
Toledo, OH 43606-3390

Phone (419) 530-8080
Fax (419) 530-8086
Web: http://www.che.utoledo.edu
E-mail: cheedept@eng.utoledo.edu

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Tufts University

. . . 1901-2001

Ranked among the best universities in the country, Tufts is known for technological innovation, cutting-edge research, and dedicated faculty. Located within metropolitan Boston, Tufts is a community of committed scholars and learners—but, most importantly, people who put knowledge to work. The Department of Chemical and Biological Engineering offers M.S. and Ph.D. programs in chemical and biotechnology engineering.

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- Small classes that ensure individualized attention from our superb faculty
- An active graduate student council, working to enhance student social and academic life

TEACHING AND RESEARCH AREAS

BIOTECHNOLOGY	MATERIALS & INTERFACES
• Protein Stability, Folding, and Aggregation • Enzymatic Polymerization • Biopolymer Engineering • Tissue Engineering • Host-Virus Interaction • Systems Biology	• Composite Materials • Polymer & Fiber Science • Biomineralization • Nucleation • Hydrogen-Permeable Metals
CHEMICAL ENGINEERING FUNDAMENTALS	**ENVIRONMENTAL ENGINEERING**
• Crystallization • Freeze Concentration • Membrane Processes • Heterogeneous Catalysis • Ionic Liquids	• Environmental Catalysis • Air Pollution Control • Pollution Prevention • Bioremediation and Biodegradation • Fuel Cells

FULL-TIME FACULTY

Assoc. Professor Eliana De Bernardez Clark, Chair
Ph.D. U.N.L. Argentina
Professor Gregory Botsaris
Ph.D. M.I.T.
Asst. Professor Karen Duca
Ph.D. Brandeis
Professor Maria Flytzani-Stephanopoulos
Ph.D. University of Minnesota
Professor David L. Kaplan
Ph.D. Syracuse University
Assoc. Professor Jerry H. Meldon
Ph.D. M.I.T.
Assoc. Professor Daniel F. Ryder
Ph.D. Worcester Polytechnic Institute
Professor Nak-Ho Sung
Ph.D. M.I.T.
Professor Kenneth A. VanWormer
Sc.D. M.I.T.

RESEARCH FACULTY

Asst. Professor Aurelie Edwards
Ph.D. M.I.T.
Professor Howard Saltsburg
Ph.D. Boston University
Asst. Professor Regina Valluzzi
Ph.D. University of Massachusetts, Amhert
Assoc. Professor Vladimir Volloch
Ph.D. Moscow University

ADJUNCT FACULTY

Asst. Professor Dale Gyure
Ph.D. University of Colorado
Profesor Walter Juda
Ph.D. University of Lyons
Professor Gordana Vunjak-Novakovic
Ph.D. University of Belgrade

For more information contact: Graduate Studies Chair, Tufts University, Chemical & Biological Engineering Dept.
4 Colby Street, Medford, MA 02155
Tel: 617.627.3900 Fax: 617.627.3991 Website: www.ase.tufts.edu/chemical

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*

Peter N. Pintauro • *Electrochemical Engineering • Membrane Separations • Electro-organic Synthesis • Environmental Remediation*

For Additional Information, Please Contact

Graduate Advisor
Department of Chemical Engineering
Tulane University • New Orleans, LA 70118
Phone (504) 865-5772 • E-mail ddekee@tulane.edu

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.

Engineering the World

The University of Tulsa

The University of Tulsa is Oklahoma's oldest and largest independent university. Approximately 4,900 students pursue more than 70 major fields of study and graduate programs in more than 25 disciplines.

Tulsa, Oklahoma

Off-campus activities abound in Tulsa, one of the nation's most livable cities. Our temperate climate, with four distinct seasons, is perfect for year-round outdoor activities. With a metropolitan population of 450,000, the city of Tulsa affords opportunities for students to gain internship and work experience in its dynamic data processing, petroleum, medical, and financial industries. One can also enjoy world-class ballet, symphony and theatre performances, and exhibits in the cultural community. Annual events include Mayfest, Oktoberfest, the Chili Cook-off and Bluegrass Festival, the Tulsa Run, and the Jazz and Blues festivals.

Chemical Engineering at TU

TU enjoys a solid international reputation for expertise in the petroleum industry, and offers environmental and biochemical programs. The department places particular emphasis on experimental research, and is proud of its strong contact with industry.

The department offers a traditional Ph.D. program and three master's programs:

- Master of Science degree (thesis program)
- 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
Graduate Program Director • Chemical Engineering Department
The University of Tulsa • 600 South College Avenue • Tulsa, Oklahoma 74104-3189
Phone (918) 631-2644 • Fax (918) 631-3268
E-mail: charles-sheppard@utulsa.edu • Graduate School application: 1-800-882-4723

Vanderbilt University

DEPARTMENT OF CHEMICAL ENGINEERING

Graduate Study Leading to the M.S. and Ph.D. Degrees

Graduate work in chemical engineering provides an opportunity for study and research at the cutting edge - to contribute to shaping a new model of what chemical engineering is and what chemical engineers do. Formal course work for the Ph.D. essentially doubles the exposure to chemical engineering principles that students receive as undergraduates. Thesis research gives unparalleled experience in problem solving, the key to challenging research assignments in industry and admission to the worldwide community of scholars.

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

Located in Nashville, Tennessee, Vanderbilt is a selective, comprehensive teaching and research university. Ten schools offer both an outstanding undergraduate and a full range of graduate and professional programs. With a prestigious faculty of more than 1,800 full-time and 300 part-time members, Vanderbilt attracts a diverse student body of approximately 5,900 undergraduates and 4,300 graduate and professional students from all 50 states and over 90 foreign countries.

For more information:

Director of Graduate Studies
Chemical Engineering Department
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.

Kenneth A. Debelak *(Ph.D., 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 *(Ph.D., University of Tennessee)*
Capillarity; insoluble monolayers/L-B films; adsorption from the gas phase and from solution; contact angles and wetting; polymer interfaces; spreading on liquid surfaces; fine particle/powder technology; modeling/flow of fluids in porous media; tribology.

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 considerations, kinetics, and effects of substrate topography on chemical vapor deposition, 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

WRITE:
Graduate Admissions
Dept. of Chemical Engineering
102 Engineers' Way
P.O. Box 400741
University of Virginia
Charlottesville, VA 22904-4741

PHONE:
434-924-7778

E-MAIL:
cheadmis@virginia.edu

VISIT OUR WEBSITE :
www.che.virginia.edu

...fulfilling Thomas Jefferson's vision

The educational philosophy of the department reflects a commitment to continuing the Jeffersonian ideal of students and faculty as equal partners in the pursuit of knowledge.

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**

Gateways of Opportunity

Research Centers and Focus Areas

Polymer Materials and Interface Laboratory
Center for Composite Materials and Structures
Center for Adhesives and Sealant Science
Center for Biomedical Engineering
Biotechnology and Tissue Engineering
Reactions and Catalysis
Colloid and Surface Science
Computer-aided Design
Microelectronics and Nanotechnology
Supercritical Fluids and High Pressure Processing

Faculty . . .

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

William L. Conger (Pennsylvania)
Chemical engineering education

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

Richey M. Davis (Princeton)
Colloids and polymer solutions

Kimberly E. Forsten (Illinois)
Computational bioengineering 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, polymer spectroscopy

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)
Microelectronics, polymers

Joseph T. Sullivan (Minnesota)
Marketing and chemical distribution

Kevin E. Van Cott (Virginia Tech)
Tissue remodeling, biomaterials

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

Telephone: 540-231-5771 • Fax: 540-231-5022
e-mail: dianec@vt.edu • http://www.eng.vt.edu/eng/che

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- 22 students from foreign countries

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Graduate Admissions, University of Washington
Department of Chemical Engineering
Box 351750
Seattle, Washington 98195-1750

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 Science

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

Albert L. Babb, Ph.D., Illinois	• Biomedical Engineering; Hemodialysis
François Baneyx, Ph.D., Texas (Austin)	• Biotechnology; Protein Technology; Biochemical Engineering
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

Computers and Process Control

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.

Biking and rock-climbing are just two of the many outdoor recreations in Eastern Washington, rich in mountains, fields, rivers, lakes, and forests.

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

Department email address: chedept@che.wsu.edu

Departmental Website: www.che.wsu.edu

WSU Graduate School

Phone: 509-335-1446

Email: gradsch@wsu.edu

Website: www.gradsch@wsu.edu

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

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Master's and Doctoral Programs

M. Al-Dahhan ▶ Chemical Reaction Engineering, Multiphase Reactors, Mass Transfer, Process Engineering
P. Biswas ▶ Aerosol Dynamics, Environmental Engineering
M. P. Dudukovic ▶ Chemical Reaction Engineering, Tracer Methods, Environmental Engineering
J. T. Gleaves ▶ Heterogeneous Catalysis, Surface Science, Microstructured Materials
B. Joseph ▶ Process Control, Process Optimization, Expert Systems
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
C. Thies ▶ Biochemical Engineering, Microencapsulation
J. Turner ▶ Environmental Reaction Engineering, Air Quality Policy and Analysis, Air Pollution Control

For Information Contact

Graduate Admissions Committee
Washington University
Department of Chemical Engineering
Campus Box 1198
One Brookings Drive
St. Louis, Missouri 63130-4899
E-mail: chedept@wuche3.wustl.edu
Phone: (314) 935-6082 • *Fax:* (314) 935-7211

WAYNE STATE UNIVERSITY

Chemical Engineering and Materials Science

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

M.S. and Ph.D. in Materials Science and Engineering

Graduate Certificate in Polymer Engineering

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 stabi lity 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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Surface and Colloid Phenomena

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George E. Keller, II
Fred A. Olson
William E. Wallace
Robert H. Wildi

For Application Information, Write

Professor Rakesh Gupta ◆ Graduate Admission Committee
Department of Chemical Engineering ◆ P.O. Box 6102
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◪ ***Michael D. Graham***
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◪ ***Charles G. Hill, Jr.***
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Semiconductor and advanced materials processing, solid-state and electronic materials, nanostructured materials

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Cellular engineering, biopolymers, biochemical reaction kinetics

◪ ***James B. Rawlings (Chairman)***
Process modeling, dynamics and control, particle technology, crystallization

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Reaction engineering, polymerization processes, process dynamics and control

◪ ***Thatcher W. Root***
Surface chemistry, catalysis, solid-state NMR, and protein chromatography

◪ ***Eric V. Shusta***
Applied molecular biology, protein engineering, biopharmaceutical design

◪ ***Ross E. Swaney***
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◪ ***John Yin***
Applied virology, molecular process engineering, bio-informatics

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Areas of Research

Advanced Materials
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- Molecular Sieve Zeolites
- Nanostructured Materials

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- Bioreactor Analysis
- Bioseparations
- Bacterial Adhesion to Surfaces

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- Adsorption and Transport in Porous Media
- Heterogeneous Catalysis
- Surface Science of Catalysis
- Supported Molten Metal Catalysis
- Zeolite Catalysis
- Computational Fluid Dynamics
- Catalytic Microkinetics

Environmental Engineering
- Bioremediation
- Neutron Scattering from Aerosols
- Nucleation and Phase Transitions
- Environmental Catalysis
- Fuel Cells/Catalytic Reforming
- Renewable Fuels and Chemicals

Process Analysis and Control
- Nonlinear Process Analysis and Control
- Process Condition Monitoring, Fault Detection and Diagnosis

Faculty

Terri A. Camesano • *Ph.D., Penn State*

William M. Clark • *Ph.D., Rice*

Ravindra Datta • *Ph.D., U.C. Santa Barbara*

David DiBiasio • *Ph.D., Purdue*

Anthony G. Dixon • *Ph.D., Edinburgh*

Nikolaos K. Kazantzis • *Ph.D., Michigan*

Yi Hua Ma • *Sc.D., MIT*

Fabio H. Ribeiro • *Ph.D., Stanford University*

Robert W. Thompson • *Ph.D., Iowa State*

Barbara E. Wyslouzil • *Ph.D., Caltech*

William R. Moser, Emeritus • *Ph.D., MIT*

Alvin H. Weiss, Emeritus • *Ph.D., U. Pennsylvania*

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For further information contact:

Graduate Coordinator • Chemical Engineering Department
Worcester Polytechnic Institute • 100 Institute Road
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The Coal Utilization Research Group (coalsu.uwyo.edu) has been established by the Chemical and Petroleum Engineering Department with western coal producers and utilities. The Coal Utilization Research Group, Enhanced Oil Recovery Institute, NSF/EPSCoR and DOE/EPSCoR Programs provide excellent financial aid packages to graduate students.

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For more information contact

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YALE

Department of Chemical Engineering

Eric Altman, *Ph.D. Pennsylvania*

Menachem Elimelech, *Ph.D. Johns Hopkins*

Roger L. Ely, *Ph.D. Oregon State*

Gary L. Haller, *Ph.D. Northwestern*

Csaba G. Horváth, *Ph.D. Frankfurt*

Michael Loewenberg, *Ph.D. Cal Tech*

Lisa D. Pfefferle, *Ph.D. Pennsylvania*

Daniel E. Rosner, *Ph.D. Princeton*

John Y. Walz, *Ph.D. Carnegie Mellon*

Adjunct Professors

- **F. Peter Boer**
- **Donald M. Crothers**
- **William S. Hancock**
- **Joseph J. Pignatello**
- **James R. Wallis**
- **L. Lee Wikstrom**

Joint Appointments

- **Thomas Graedel** (School of Forestry & Environmental Studies)
- **Kurt Zilm**

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Materials Synthesis and Processing

Multiphase Transport Phenomena

Separation Science and Technology

Surface Science

BRIGHAM YOUNG UNIVERSITY

Graduate Studies in Chemical Engineering

M.S. and Ph.D. Degree Programs

Faculty and Research Interests

Calvin H. Bartholomew *(Stanford)* • kinetics and catalysis
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
William G. Pitt *(Wisconsin)* • materials science
Richard L. Rowley *(Michigan State)* • thermophysical properties
L. Douglas Smoot *(Washington)* • fossil energy and combustion
Kenneth A. Solen *(Wisconsin)* • biomedical engineering
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BYU

Department of Chemical and Biological Engineering

University of British Columbia

Vancouver, Canada

The following graduate degrees are available at the University of British Columbia Department of Chemical and Biological Engineering: Master of Applied Science (M.A.Sc.), Master of Engineering (M.Eng.), Master of Science (M.Sc.), and Doctor of Philosophy (Ph.D.). Thesis topics are available in the fields of faculty research that include

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Financial Aid: All students admitted to the graduate programs leading to the M.A.Sc. or Ph.D. degrees receive at least a minimum level of financial support regardless of citizenship. This amount is approximately $16,500/year and is intended to be sufficient to cover expenses for the year. This financial assistance is in the form of external fellowships or research assistantships. Research assistantships are provided by the professor under whose supervision the student is doing his or her thesis. Teaching assistantships also are available (up to approximately $2,000/year).

For further information visit our web site at
http://www.chml.ubc.ca

The Department operates joint research programs at the M.A.Sc. and Ph.D. levels with the UBC Biotechnology Laboratory and the Pulp and Paper Research Institute of Canada (PAPRICAN) in areas of common interest. An interdisciplinary M.Eng degree in Pulp and Paper Engineering is also offered by the Department in collaboration with PAPRICAN.

Application forms can be obtained from
web@chml.ubc.ca.
or from
Graduate Student Secretary • Department of Chemical and Biological Engineering
University of British Columbia • 2216 Main Mall
Vancouver, B.C., Canada V6T 1Z4
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Bucknell is a highly selective private institution that combines a nationally ranked undergraduate engineering program with the rich learning environment of a small liberal arts college. For study at the Master's level, the department offers state-of-the-art facilities for both experimental and computational work, and faculty dedicated to providing individualized training and collaboration in a wide array of research areas.

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D.P. Cavanagh (PhD, Northwestern)
Interfacial dynamics, multiphase flows, surfactants at interfaces, biofluid dynamics

J. Csernica (PhD, M.I.T.)
Diffusion in polymers, polymer surface modification

W.E. King (PhD, Pennsylvania)
Laser-tissue interactions, transport in tumors

J.E. Maneval (PhD, U.C. Davis)
NMR methods, membrane and novel separations

J.M. Pommersheim (PhD, Pittsburgh)
Transport phenomena, corrosion, modeling

M.J. Prince (PhD, U.C. Berkeley)
Biochemical systems, environmental barriers

W.J. Snyder (PhD, Penn State)
Polymer degradation, kinetics, drag reduction

M.A.S. Vigeant (PhD, Virginia)
Bacterial adhesions to surfaces

For further information, contact

Dr. William King • Chemical Engineering Department • Bucknell University • Lewisburg, PA 17837
Phone 570-577-1114 • wking@bucknell.edu • http://www.departments.bucknell.edu/grad_studies/

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IN THE CITY OF NEW YORK

Graduate Programs in Chemical Engineering

Faculty and Research Areas

B. BERNE ◆ *Statistical Mechanics, Theoretical Chemistry*
L. E. BRUS ◆ *Nanocrystals*
S. CALABRESE BARTON ◆ *Fuel Cells*
H. Y. CHEH ◆ *Electrochemical Engineering*
C. J. DURNING ◆ *Polymer Physical Chemistry*
G. FLYNN ◆ *Physical Chemistry*
C. C. GRYTE ◆ *Polymer Science, Separation Processes, Pharmaceutical Engineering*
J. JU ◆ *Genomics*
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E. F. LEONARD ◆ *Biomedical Engineering, Transport Phenomena*
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For Further Information, Write

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Graduate Committee
Department of
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L.L. Edwards	Computer Aided Process Design, Systems Analysis, Pulp/Paper Engineering, Numerical Methods and Optimization
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A. Thomas	Transport Phenomena, Fluid Flow, Separation Magnetohydrodynamics
V. Utgikar	Environmental Fluid Mechanics, Chem/Bio Remediation, Kinetics (Idaho Falls campus)
M. Von Braun	Hazardous Waste Site Analysis, Computer Mapping

For Further Information and Application write:
Graduate Advisor, Chemical Engineering Department, University of Idaho, Moscow, Idaho 83844-1021

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Faculty

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Jim Palmer

Laura Wesson

Ronald H. Thompson

Ahmed Behbahani

Bill B. Elmore

For More Information, Contact

Dr. Bill B. Elmore, Ph.D.; P.E.
Assoc. Professor & Chairman
Chemical Engineering
Louisiana Tech University
Ruston, Louisiana 71272

(318) 257-2483

belmore@engr.latech.edu

University of Louisville

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Molecular Modeling • Waste Management • CVD of Diamond Films

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FOR FURTHER INFORMATION CONTACT
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Tel: 61 3 9905 1872 • Fax: 61 3 9905 5686
Web site: http://www.eng.monash.edu.au/chemeng/
e-mail: lilyanne.price@eng.monash.edu.au

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- Nanostructure Engineering
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FOR INFORMATION WRITE:

Chairman, Graduate Committee
Dept. of Chemical Engineering
Northeastern University
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CURRENT AREAS OF INTEREST

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