INDEX ■ Graduate Education Advertisements

Graduate Education in Chemical and Biomolecular Engineering

Teaching and research assistantships as well as industrially sponsored fellowships available. In addition to stipends, tuition and most fees are waived. PhD students may get some incentive scholarships.

N. D. LEIPZIG

J. H. PAYER

H. CASTANEDA

J. R. ELLIOTT

R. S. LILLARD

J. E. PUSKAS

G. G. CHASE

E. A. EVANS

L. LIU

H. C. QAMMAR

G. CHENG

M. IANUZZI

C. MONTY

D.P. VISCO

H. M. CHEUNG

L.-K. JU, *Chair*

B. Z. NEWBY

J. ZHENG

- ***Castaneda:*** *Electrochemistry & Corrosion, Corrosion evolution, Modeling, Coatings damage/performance, special alloys.*
- ***Chase:*** *Multiphase Processes, Nanofibers, Filtration, Coalescence*
- ***Cheng:*** *Biomaterials, Protein Engineering, Drug Delivery and Nanomedicine*
- ***Cheung:*** *Nanocomposite Materials, Sonochemical Processing, Polymerization in Nanostructured Fluids, Supercritical Fluid Processing*
- ***Elliott:*** *Molecular Simulation, Phase Behavior, Physical Properties, Process Modeling, Supercritical Fluids*
- ***Evans:*** *Materials Processing and CVD Modeling, Plasma Enhanced Deposition and Crystal Growth Modeling*
- ***Iannuzzi:*** *Corrosion Engineering, Environmentally Assistaced Cracking*
- ***Ju:*** *Renewable Bioenergy, Environmental Bioengineering*
- ***Leipzig:*** *Cell and Tissue Mechanobiology, Biomaterials, Tissue Engienering*
- ***Lillard:*** *Corrosion, Oxide Films, SCC and Hydrogen Interactions with Metals*
- ***Liu:*** *Biointerfaces, Biomaterials, Biosensors, Tissue Engineering*
- ***Monty:*** *Reaction Engineering, Biomimicry, Microsensors*
- ***Newby:*** *Surface Modification, Alternative Patterning, AntiFouling Coatings, Gradient Surfaces*
- ***Payer:*** *Corrosion & Electrochemistry, Systems Health Monitoring and Reliability, Materials Performance and Failure Analysis*
- ***Puskas:*** *Biomaterials, Green Polymer Chemistry and Engineering, Biomimetic Processes*
- ***Qammar:*** *Nonlinear Control, Chaotic Processes, Engineering Education*
- ***Visco:*** *Thermodynamics, Computer-aided molecular design*
- ***Zheng:*** *Computational Biophysics, Biomolecular Interfaces, Biomatierials*

Chairman, Graduate Committee
Department of Chemical and Biomolecular Engineering
The University of Akron
Akron, OH 44325-3906
Phone (330) 972-7250
Fax (330) 972-5856
www.chemical.uakron.edu

THE UNIVERSITY OF
ALABAMA

Chemical & Biological Engineering

A dedicated faculty with state of the art facilities, offering research programs leading to Doctor of Philosophy and Master of Science degrees. In 2009, the department moved into its new home, the $70 million Science and Engineering Complex.

Research Areas:

Biological Applications of Nanomaterials, Biomaterials, Catalysis and Reactor Design, Drug Delivery, Electronic Materials, Energy and CO_2 Separation and Sequestration, Fuel Cells, Interfacial Transport, Magnetic Materials, Membrane Separations and Reactors, Pharmaceutical Synthesis and Microchemical Systems, Polymer Rheology, Simulations and Modeling

Faculty:

David Arnold (Purdue)
Yuping Bao (Washington)
Jason Bara (Colorado)
Christopher Brazel (Purdue)
Eric Carlson (Wyoming)
Peter Clark (Oklahoma State)
Nagy El-Kaddah (Imperial College)
Arun Gupta (Stanford)
Ryan Hartman (Michigan)
John Kim (Maryland, Baltimore)
Tonya Klein (NC State)
Alan Lane (Massachusetts)
Margaret Liu (Ohio State)
Stephen Ritchie (Kentucky)
C. Heath Turner (NC State)
Mark Weaver (Florida)
John Wiest (Wisconsin)

For Information Contact:

Director of Graduate Studies
Chemical & Biological Engineering
The University of Alabama
Box 870203
Tuscaloosa, AL 35487-0203

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alane@eng.ua.edu
http://che.eng.ua.edu

An equal employment/equal educational opportunity institution

UNIVERSITY OF ALBERTA

DEPARTMENT OF CHEMICAL AND MATERIALS ENGINEERING

Our Department of Chemical and Materials Engineering offers students the opportunity to **study** and conduct **leading research** with **world-class academics** in the **top program** in Canada, and one of the very best in North America. Our graduate student population is culturally diverse, academically strong, innovative, creative, and is drawn to our challenging and supportive environment from all areas of the world.

► Degrees are offered at the MSc and PhD levels in **chemical engineering**, **materials engineering**, and **process control**.

► All full-time graduate students in **research programs** receive a **stipend** to cover living expenses and tuition.

Our graduates are sought-after professionals who will be international leaders of tomorrow's chemical and materials engineering advances. Research topics include:

biomaterials, biotechnology, coal combustion, colloids and interfacial phenomenon, computational chemistry, computational fluid dynamics, computer process control, corrosion and wear engineering, drug delivery, electrochemistry, fluid-particle dynamics, fuel cell modeling and control, heavy oil processing and upgrading, heterogeneous catalysis, hydrogen storage materials, materials processing, micro-alloy steels, micromechanics, mineral processing, molecular sieves, multiphase mixing, nanostructured biomaterials, oil sands, petroleum thermodynamics, pollution control, polymers, powder metallurgy, process and performance monitoring, rheology, surface science, system identification, thermodynamics, and transport phenomena.

► The Faculty of Engineering has added more than **one million square feet** of **outstanding teaching**, **research**, **and personnel space** in the past six years. We offer **outstanding** and **unique experimental** and **computational facilities**, including access to one of the most technologically advanced nanotechnology facilities in the world – the **National Institute for Nanotechnology**, connected by pedway to the Chemical and Materials Engineering Building.

► Annual research funding for our Department is over **$14 million**. Externally sponsored funding to support engineering research in the entire Faculty of Engineering has increased to **over $50 million** each year—the **largest amount** of any Faculty of Engineering in Canada.

www.cme.engineering.ualberta.ca

S. Bradford, PhD (Iowa State University) *Emeritus*
R.E. Burrell, PhD (University of Waterloo)
K. Cadien, PhD (University of Illinois at Champaign-Urbana)
W. Chen, PhD (University of Manitoba)
P. Choi, PhD (University of Waterloo)
K.T. Chuang, PhD (University of Alberta) *Emeritus*
I. Dalla Lana, PhD (University of Minnesota) *Emeritus*
A. de Klerk, PhD (University of Pretoria)
G. Dechaine, PhD (University of Alberta)
J. Derksen, PhD (Eindhoven University of Technology)
S. Dubljevic, PhD (University of California, Los Angeles)
R.L. Eadie, PhD (University of Toronto)
A. Elias, PhD (University of Alberta)
J.A.W. Elliott, PhD (University of Toronto)
T.H. Etsell, PhD (University of Toronto)
G. Fisher, PhD (University of Michigan) *Emeritus*
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A. Gerlich, PhD (University of Toronto)
M.R. Gray, PhD (California Institute of Technology)
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H. Henein, PhD (University of British Columbia)
B. Huang, PhD (University of Alberta)
D.G. Ivey, PhD (University of Windsor)
S.M Kresta, PhD (McMaster University)
S.M. Kuznicki, PhD (University of Utah)
D. Li, PhD (McGill University)
J. Liu, PhD (University of California, Los Angeles)
Q. Liu, PhD (University of British Columbia)
Q. Liu, PhD (China University of Mining & Technology)
J. Luo, PhD (McMaster University)
D.T. Lynch, PhD (University of Alberta) *Dean of Engineering*
J.H. Masliyah, PhD (University of British Columbia)
Distinguished University Professor Emeritus
A.E. Mather, PhD (University of Michigan) *Emeritus*
W.C. McCaffrey, PhD (McGill University)
P.F. Mendez, PhD (MIT)
D. Mitlin, PhD (University of California, Berkeley)
K. Nandakumar, PhD (Princeton University) *Emeritus*
R. Narain, PhD (University of Mauritius)
N. Nazemifard, PhD (University of Alberta)
J. Nychka, PhD (University of California, Santa Barbara)
F. Otto, PhD (University of Michigan) *Emeritus*
B. Patchett, PhD (University of Birmingham) *Emeritus*
V. Prasad, PhD (Rensselaer Polytechnic Institute)
S. Sanders, PhD (University of Alberta)
D. Sauvageau, PhD (McGill University)
N. Semagina, PhD (Tver State Technical Univ.)
S.L. Shah, PhD (University of Alberta)
J.M. Shaw, PhD (University of British Columbia)
T. Thundat, PhD (University of Albany, New York)
H. Uludag, PhD (University of Toronto)
L. Unsworth, PhD (McMaster University)
S.E. Wanke, PhD (University of California, Davis) *Emeritus*
M. Wayman, PhD (University of Cambridge) *Emeritus*
M.C. Williams, PhD (University of Wisconsin) *Emeritus*
G. Winkel, MSc (University of Alberta)
R. Wood, PhD (Northwestern University) *Emeritus*
Z. Xu, PhD (Virginia Polytechnic Institute and State University)
T. Yeung, PhD (University of British Columbia)
H. Zeng, PhD (University of California, Santa Barbara)
H. Zhang, PhD (Princeton University)

For further information, contact:
Graduate Program Office
Department of Chemical and Materials Engineering
University of Alberta
Edmonton, Alberta, Canada T6G 2V4
Phone: 780-492-1823 Fax: 780-492-2881

FACULTY / RESEARCH INTERESTS

ROBERT G. ARNOLD, Professor (CalTech)
Microbiological Hazardous Waste Treatment, Metals Speciation and Toxicity

JAMES C. BAYGENTS, Associate Professor and Associate Dean of Engineering (Princeton)
Fluid Mechanics, Transport and Colloidal Phenomena, Bioseparations

PAUL BLOWERS, Distinguished Associate Professor (Illinois, Urbana-Champaign)
Chemical Kinetics, Catalysis, Environmental Foresight, Green Design

WENDELL ELA, Professor (Stanford)
Particle-Particle Interactions, Environmental Chemistry

JAMES FARRELL, Professor (Stanford)
Sorption/desorption of Organics in Soils

JAMES A. FIELD, Professor and Chair (Wageningen University)
Bioremediation, Environmental Microbiology, Hazardous Waste Treatment

DOMINIC GERVASIO, Research Professor (Case Western Reserve)
Electrocatalysis, Ion Conductors, Electrochemistry including: Electroplating, Corrosion and Energy Storage and Power Sources including Fuel Cells, Batteries, Fuels, Fuel Reforming and Solar Cells

ROBERTO GUZMAN, Professor (North Carolina State)
Affinity Protein Separations, Polymeric Surface Science

ANTHONY MUSCAT, Professor (Stanford)
Kinetics, Surface Chemistry, Surface Engineering, Semiconductor Processing, Microcontamination

KIMBERLY OGDEN, Professor (Colorado)
Bioreactors, Bioremediation, Organics Removal from Soils

THOMAS PETERSON, National Science Foundations' Directorate for Engineering (CalTech)
Global Education, Semiconductor Research, Energy Sustainability

ARA PHILIPOSSIAN, Professor (Tufts)
Chemical/Mechanical Polishing, Semiconductor Processing

EDUARDO SÁEZ, Distinguished Professor (UC, Davis)
Polymer Flows, Multiphase Reactors, Colloids

GLENN L. SCHRADER, Professor and Associate Dean of Engineering (Wisconsin)
Catalysis, Environmental Sustainability, Thin Films, Kinetics, Solar Energy

FARHANG SHADMAN, Regents' Professor (Berkeley)
Reaction Engineering, Kinetics, Catalysis, Reactive Membranes, Microcontamination, Semiconductor Manufacturing

REYES SIERRA, Professor (Wageningen University)
Environmental Biotechnology, Semiconductor Manufacturing, Wastewater Treatment

SHANE A. SNYDER, Professor (Michigan State University)
Endocrine Disruptor and Emerging Contaminant Detection and Treatment, Water Reuse Technologies and Applications

ARMIN SOROOSHIAN, Assistant Professor (CalTech)
Aerosol Composition and Hygroscopicity, Climate Change

For further information
http://www.chee.arizona.edu
Chairman, Graduate Study Committee
Department of Chemical and Environmental Engineering
P.O. BOX 210011
The University of Arizona
Tucson, AZ 85721

The University of Arizona is an equal opportunity educational institution/equal opportunity employer. Women and minorities are encouraged to apply.

Chemical and Environmental Engineering at

THE UNIVERSITY OF
ARIZONA
TUCSON ARIZONA

The Department of Chemical and Environmental Engineering at the University of Arizona offers a wide range of research opportunities in all major areas of chemical engineering and environmental engineering. Our department offers a comprehensive approach to sustainability which is grounded on the principles of conservation and responsible management of water, energy, and material resources. Research initiatives in solar and other renewable energy, desalinization, climate modeling, and sustainable nanotechnology are providing innovative solutions to the challenges of environmental sustainability. A significant portion of research effort is devoted to areas at the boundary between chemical and environmental engineering, including environmentally benign semiconductor manufacturing, environmental remediation, environmental biotechnology, and novel water treatment technologies.The department offers a fully accredited undergraduate degree in chemical engineering, as well as MS and PhD degrees in both chemical and environmental engineering.

Financial support is available through fellowships, government and industrial grants and contracts, teaching and research assistantships.

Tucson has an excellent climate and many recreational opportunities. It is a growing modern city that retains much of the old Southwestern atmosphere.

Ira A. Fulton Schools of Engineering

ARIZONA STATE UNIVERSITY

Chemical Engineering

Learn and discover in a multi-disciplinary research environment with opportunities in advanced materials, atmospheric chemistry, biotechnology, electrochemistry and sensors, electronic materials processing, engineering education, process control, separation and purification technology, thin films and flexible displays.

Program Faculty

Jean M. Andino, Ph.D., P.E., Caltech.
Atmospheric chemistry, gas-phase kinetics and mechanisms, heterogeneous chemistry, air pollution control

James R. Beckman, Emeritus, Ph.D., Arizona.
Unit operations, applied mathematics, energy-efficient water purification, fractionation, CMP reclamation

Veronica A. Burrows, Ph.D., Princeton.
Engineering education, surface science, semiconductor processing, interfacial chemical and physical processes for sensors

Lenore L. Dai, Ph.D., Illinois.
Surface, interfacial, and colloidal science, nanorheology and microrheology, materials at the nanoscale, synthesis of novel polymer composites and "smart" materials

Erica Forzani, Ph.D., Cordoba National University.
Chemical and biosensors, non-invasive sensors, sensor integration, wireless and lab-on-cell-phone sensors

Jerry Y.S. Lin, Ph.D., Worcester Polytechnic Institute.
Advanced materials (inorganic membranes, adsorbents and catalysts) for applications in novel chemical separation and reaction processes

Mary Laura Lind, Ph.D., Caltech.
Advanced membrane materials synthesis and characterization, environmental nanotechnology, sustainable energy and water production, amorphous metals

David Nielsen, Ph.D., Queen's University at Kingston.
Biochemical engineering, metabolic engineering, bioreactor and bioprocess engineering, product recovery

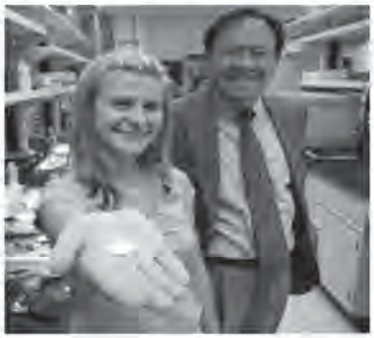
Robert Pfeffer, Ph.D., New York University.
Dry particle coating and supercritical fluid processing to produce engineered particulates with tailored properties, fluidization, mixing, coating and processing of ultra-fine and nano-structured particulates, filtration of sub-micron particulates; agglomeration, sintering and granulation of fine particles

Kaushal Rege, Ph.D., Rensselaer Polytechnic Institute.
Molecular and cellular engineering, engineered cancer therapeutics and diagnostics, cellular interactions in cancer metastasis

Daniel E. Rivera, Ph.D., Caltech.
Control systems engineering, dynamic modeling via system identification, optimized interventions for behavioral health, supply chain management

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

Cesar Torres, Ph.D., Arizona State.
Bioenergy, microbial electrochemical cells, microbial and biofilm kinetics, microscopic techniques to image biofilms



Affiliate Faculty

Paul Johnson, Ph.D., Princeton.
Chemical migration and fate in the environment as applied to environmental risk assessment and the development, monitoring and optimization of technologies for aquifer restoration and water resources management

Bruce E. Rittmann, Ph.D., N.A.E., P.E., Stanford.
Environmental biotechnology, microbial ecology, environmental chemistry, environmental engineering

Graduate Faculty

Terry Alford (Materials Science and Engineering), **Michael Caplan** (Biomedical Engineering), **Peter Crozier** (Materials Science and Engineering), **Hanqing Jiang** (Mechanical Engineering), and **Robert Wang** (Mechanical Engineering)

For additional details visit
http://engineering.asu.edu/semte/Chemical.html
or contact (480) 965-4979 or semtegrad@asu.edu

Graduate Program in the Ralph E. Martin Department of Chemical Engineering

University of Arkansas

The Department of Chemical Engineering at the University of Arkansas offers graduate programs leading to M.S. and Ph.D. Degrees.

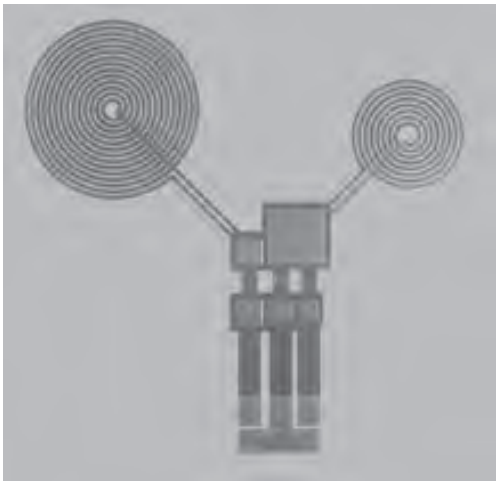
Qualified applicants are eligible for financial aid. Annual departmental Ph.D. stipends provide $20,000, Doctoral Academy Fellowships provide up to $30,000, and Distinguished Doctoral Fellowships provide $40,000. For stipend and fellowship recipients, all tuition is waived. Applications received before April 1 will be given first consideration. Fellowship applications must be made before January 15.

Areas of Research

- Biochemical engineering
- Biological and food systems
- Biomolecular nanophotonics
- Electronic materials processing
- Fate of pollutants in the environment
- Hazardous chemical release consequence analysis
- Integrated passive electronic components
- Membrane separations
- Micro channel electrophoresis
- Renewable fuels
- Phase equilibria and process design

Faculty

M.D. Ackerson
R.E. Babcock
R.R. Beitle
E.C. Clausen
J.A. Havens
C.N. Hestekin
J.A. Hestekin
W.R. Penney
X. Qian
D.K. Roper
S.L. Servoss
T.O. Spicer
G.J. Thoma
R.K. Ulrich
S.R. Wickramasinghe



For more information contact

Dr. Jerry Havens <jhavens@uark.edu> or 479-575-4951
Chemical Engineering Graduate Program Information: http://www.cheg.uark.edu/gradprogram.php

CHEMICAL ENGINEERING AT AUBURN UNIVERSITY

ALTERNATIVE ENERGY & FUELS BIOCHEMICAL ENGINEERING BIOMATERIALS BIOMEDICAL ENGINEERING BIOPROCESSING & BIOENERGY CATALYSIS & REACTION ENGINEERING COMPUTER-AIDED ENGINEERING DRUG DELIVERY ENERGY CONVERSION & STORAGE ENVIRONMENTAL BIOTECHNOLOGY FUEL CELLS GREEN CHEMISTRY MATERIALS MEMS & NEMS MICROFIBROUS MATERIALS NANOTECHNOLOGY POLYMERS PROCESS CONTROL PULP & PAPER SUPERCRITICAL FLUIDS SURFACE & INTERFACIAL SCIENCE SUSTAINABLE ENGINEERING MOLECULAR THERMODYNAMICS

W. ROBERT ASHURST University of California, Berkeley
MARK E. BYRNE Purdue University
ROBERT P. CHAMBERS University of California, Berkeley
VIRGINIA A. DAVIS Rice University
ALLAN E. DAVID University of Maryland
STEVE R. DUKE University of Illinois at Urbana-Champaign
MARIO R. EDEN Technical University of Denmark
RAM B. GUPTA University of Texas at Austin
THOMAS R. HANLEY Virginia Tech Institute
MARKO J. HAKOVIRTA University of Helsinki
YOON Y. LEE Iowa State University
ELIZABETH A. LIPKE Rice University
GLENNON MAPLES Oklahoma State University
RONALD D. NEUMAN The Institute of Paper Chemistry
TIMOTHY D. PLACEK University of Kentucky
CHRISTOPHER B. ROBERTS University of Notre Dame
BRUCE J. TATARCHUK University of Wisconsin
JIN WANG University of Texas at Austin

AUBURN UNIVERSITY offers a challenging graduate curriculum and research program that prepares its PhD and MS graduates for successful careers. Thanks to an exceptional team of educators and researchers, our department remains at the forefront of discovery and innovation. The size and strength of Auburn's research program provides important advantages for graduate students. Auburn maintains a top ranking in research awards per faculty member, allowing the department to provide excellent fellowships and assistantships and offer cutting-edge research equipment in our laboratories.

During the past decade, Auburn chemical engineering has continued to increase in size and strength, allowing the program to provide distinct opportunities and advantages to its students, and produce innovative research.

FOR MORE INFORMATION

Director of Graduate Recruiting
Department of Chemical Engineering
Auburn, AL 36849-5127

Phone 334.844.4827
Fax 334.844.2063

www.eng.auburn.edu/chen
chemical@eng.auburn.edu

Financial assistance is available to qualified applicants.

Auburn University is an equal opportunity educational institution/employer.

AUBURN UNIVERSITY

***Vancouver** is the largest city in Western Canada, ranked the 3rd most livable place in the world*. Vancouver's natural surroundings offer limitless opportunities for outdoor pursuits throughout the year - hiking, canoeing, mountain biking, skiing... In 2010, the city hosted the Olympic and Paraolympic Winter Games.*

Chemical and Biological Engineering Building, officially opened in 2006

Faculty

Susan A. Baldwin (Toronto)
Xiaotao T. Bi (British Columbia)
Louise Creagh (California, Berkeley)
Naoko Ellis (British Columbia)
Peter Englezos (Calgary)
James Feng (Minnesota)
Bhushan Gopaluni (Alberta)
John R. Grace (Cambridge)
Christina Gyenge (British Columbia)
Elod Gyenge (British Columbia)
Savvas Hatzikiriakos (McGill)
Charles Haynes (California, Berkeley)
Dhanesh Kannangara (Ottawa)
Ezra Kwok (Alberta)
Anthony Lau (British Columbia)
C. Jim Lim (British Columbia)
Mark D. Martinez (British Columbia)
Madjid Mohseni (Toronto)
James M. Piret (MIT)
Dusko Posarac (Novi Sad)
Kevin J. Smith (McMaster)
Fariborz Taghipour (Toronto)
Heather Trajano (California, Riverside)
David Wilkinson (Ottawa)

Professors Emeriti

Bruce D. Bowen (British Columbia)
Richard Branion (Saskatchewan)
Sheldon J.B. Duff (McGill)
Norman Epstein (New York)
Richard Kerekes (McGill)
Colin Oloman (British Columbia)
Royann Petrell (Florida)
A. Paul Watkinson (British Columbia)

The University of British Columbia is the largest public university in Western Canada and is ranked among the top 40 institutes in the world by *Newsweek* magazine, the *Times Higher Education Supplement* and Shanghai Jiao Tong University.

Faculty of Applied Science
CHEMICAL AND BIOLOGICAL ENGINEERING

www.chbe.ubc.ca

MASTER OF APPLIED SCIENCE (M.A.SC.)
MASTER OF ENGINEERING (M.ENG.)
MASTER OF SCIENCE (M.SC.)
DOCTOR OF PHILOSOPHY (PH.D.).

Currently about 170 students are enrolled in graduate studies. The program dates back to the 1920s. The department has a strong emphasis on interdisciplinary and joint programs, in particular with the Michael Smith Laboratories (MSL), Pulp and Paper Centre (PPC), Clean Energy Research Centre (CERC) and the BRIDGE program which links public health, engineering and policy research.

Main Areas of Research

Biological Engineering
Biochemical Engineering • Biomedical Engineering • Protein Engineering • Blood research • Stem Cells

Energy
Biomass and Biofuels • Bio-oil and Bio-diesel • Combustion, Gasification and Pyrolysis • Electrochemical Engineering • Fuel Cells • Hydrogen Production • Natural Gas Hydrates

Process Control

Pulp and Paper

Reaction Engineering

Environmental and Green Engineering
Emissions Control • Green Process Engineering • Life Cycle Analysis • Water and Wastewater Treatment • Waste Management • Aquacultural Engineering

Particle Technology
Fluidization • Multiphase Flow • Fluid-Particle Systems • Particle Processing • Electrostatics

Kinetics and Catalysis

Polymer Rheology

Financial Aid

Students admitted to the graduate programs leading to the M.A.Sc., M.Sc. or Ph.D. degrees receive at least a minimum level of financial support regardless of citizenship (approx. $17,500/year for M.A.Sc and M.Sc and $19,000/year for Ph.D). Teaching assistantships are available (up to approx. $1,000 per year). All incoming students will be considered for several Graduate Students Initiative (GSI) Scholarships of $5,000/year and 4-year Doctoral Fellowships Scholarships of approx. $18,000/year.

**August 2011, The Economist Intelligence Unit's Liveability Survey*

Mailing address: 2360 East Mall, Vancouver B.C., Canada V6T 1Z3 • gradsec@chbe.ubc.ca • tel. +1 (604) 822-3457

UNIVERSITY OF CALGARY

FACULTY

U. Sundararaj, Head (*Minnesota*)
J. Abedi (*Toronto*)
R. Aguilera (*Colorado School*)
J. Azaiez (*Stanford*)
L.A. Behie (*Western Ontario*)
J. Bergerson (*Carnegie-Mellon*)
S. Chen (*Regina*)
Z. Chen (*Purdue*)
M. Clarke (*Calgary*)
A. De Visscher (*Ghent, Belgium*)
M. Dong (*Waterloo*)
M.W. Foley (*Queens*)
I. D. Gates (*Minnesota*)
G. Hareland (*Oklahoma State*)
H. Hassanzadeh (*Calgary*)
J.M. Hill (*Wisconsin*)
M. Husein (*McGill*)
A.A. Jeje (*MIT*)
J. Jensen (*Texas, Austin*)
M.S. Kallos (*Calgary*)
A. Kantzas (*Waterloo*)
K. Karan (*Calgary*)
N. Mahinpey (*Toronto*)
B.B. Maini (*Univ. Washington*)
A.K. Mehrotra (*Calgary*)
S.A. Mehta (*Calgary*)
R.G. Moore (*Alberta*)
P. Pereira (*France*)
K.D. Rinker (*North Carolina*)
E. Roberts (*Cambridge*)
A. Sen (*Calgary*)
A. Settari (*Calgary*)
H. Song (*Ohio State*)
H.W. Yarranton (*Alberta*)

UNIVERSITY OF CALGARY
SCHULICH School of Engineering

DEPARTMENT OF CHEMICAL AND PETROLEUM ENGINEERING

The department offers graduate programs leading to the M.Sc., M.Eng., and Ph.D. degrees with specializations in Chemical Engineering, Petroleum Engineering, Energy & Environmental Engineering, and Biomedical Engineering. Financial assistance is available to all qualified applicants.
The areas of research include:

• **Chemical:** Catalysis; modeling, simulation & optimization; process control & dynamics; reaction engineering & chemical kinetics; rheology (polymers, suspensions & emulsions); separation operations; thermodynamics & phase equilibria; transport phenomena (deposition in pipelines, diffusion, dispersion, flow in porous media, heat transfer), nanotechnology, nanoparticle research, polymer nanocomposites;

• **Petroleum**: Drilling engineering; improved gas recovery (coal bed methane, gas hydrates, tight gas); improved oil recovery (SAGD, VAPEX, EOR, in-situ combustion); production engineering; reservoir characterization; reservoir engineering & modeling; reservoir geomechanics & simulation;

• **Environmental**: Air pollution control; alternate energy sources; greenhouse gas control & CO_2 sequestration; life cycle assessment; petroleum waste management & site remediation; solid waste management; water & wastewater treatment

• **Biomedical:** Cell & tissue engineering (cardiovascular systems, bone & joint repair); bacterial infection; biopolymers; bioproduct development; blood filtration; microvascular systems; stem cell bioprocess engineering (media & reagent development, bioreactor protocols).

For additional information, contact:
Dr. J. Azaiez, Associate Head, Graduate Studies
Department of Chemical and Petroleum Engineering
University of Calgary, Calgary, AB, Canada T2N 1N4
chemandpetenggrad@ucalgary.ca

The University of Calgary is located in Calgary, which is called the Oil and Engineering Capital of Canada, and the home of the world famous Calgary Stampede and the 1988 Winter Olympics. Most Canadian oil & petroleum companies are headquartered in Calgary. With a population of over one million, the city combines the traditions of the Old West with the sophistication of a modern urban center. Beautiful Banff National Park is 110 km west of the city. Ski resorts and numerous hiking trails are readily accessible.

CHEMICAL AND BIOMOLECULAR ENGINEERING AT

U C L A

FOCUS AREAS

- ▶ Biomolecular and Cellular Engineering
- ▶ Process Systems Engineering (Simulation, Design, Optimization, Dynamics, and Control)
- ▶ Semiconductor Manufacturing and Electronic Materials

GENERAL THEMES

- ▶ Energy and the Environment
- ▶ Nanoengineering

FACULTY

J. P. Chang
(William F. Seyer Chair in Materials Electrochemistry)

Y. Chen

P. D. Christofides

Y. Cohen

J. Davis
(Vice Provost Information Technology)

R.F. Hicks

L. Ignarro
(Nobel Laureate)

J. C. Liao
(Parsons Chair and Dept. Chair)

Y. Lu

V.I. Manousiouthakis

H.G. Monbouquette

G. Orkoulas

T. Segura

S.M. Senkan

Y. Tang

PROGRAMS

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

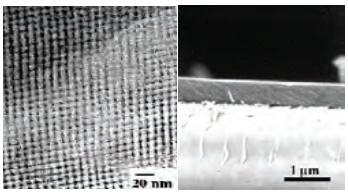
Fellowships are available for outstanding applicants interested in Ph.D. degree programs. A fellowship includes a waiver of tuition and fees plus a stipend.

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

CONTACT

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

UC Santa Barbara
chemical engineering



SBA-16 (cubic mesoporous silica)

Award-winning faculty

Bradley F. Chmelka
Patrick S. Daugherty
Michael F. Doherty
Francis J. Doyle III
Glenn H. Fredrickson, NAE
Michael J. Gordon
Song-I Han
Matthew E. Helgeson
Jacob Israelachvili, NAE, NAS, FRS
Edward J. Kramer, NAE
L. Gary Leal, NAE
Glenn E. Lucas
Eric McFarland
Samir Mitragotri
Michelle A. O'Malley
Baron G. Peters
Susannah L. Scott
M. Scott Shell
Todd M. Squires
Theofanis G. Theofanous, NAE

Research strengths

Biomaterials
Bioengineering
Catalysis
Renewable energy
Complex fluids
Polymers
Electronic and optical materials
Fluids and transport
Process systems engineering
Surfaces and thin films

Interdisciplinary research

California Nanosystems Institute
Center for Control Engineering and Computation
Center for Polymers and Organic Solids
Center for Risk Studies and Safety
Institute for Collaborative Biotechnologies
Institute for Energy Efficiency
Institute for Quantum Engineering, Science & Technology
International Center for Materials Research
Kavli Institute for Theoretical Physics
Materials Research Laboratory

Interdisciplinary research and entrepreneurship are hallmarks of Engineering at UC Santa Barbara. Many graduate students choose to be co-advised.

The UCSB campus, located on the Pacific Coast about 100 miles northwest of Los Angeles, has more than 20,000 students.

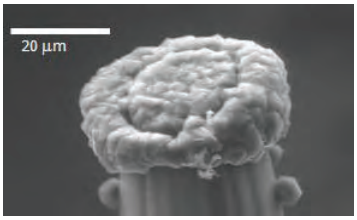
Doctoral students in good academic standing receive financial support via teaching and research assistantships. For additional information and to complete an application, visit **www.chemengr.ucsb.edu** or contact **chegrads@engineering.ucsb.edu**

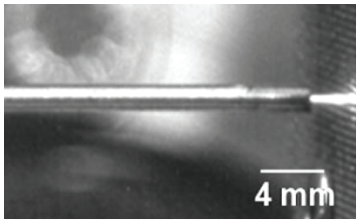
CARNEGIE MELLON: PAINTER TO PLACE ON SITE. COLOR AND BLEED

Case Western Reserve University

Advanced Research in Energy, Materials and Bio-Related Applications

The graduate programs in Chemical Engineering at Case Western Reserve University prepare students for an independent, creative career in chemical engineering research in industry or academia. Research opportunities, especially in our core strengths of energy, advanced materials, and biological applications of chemical engineering, are many. You will find CWRU to be an exciting environment in which to carry out your graduate studies. Join us to invent the future.





RESEARCH OPPORTUNITIES

Energy and Electrochemical Systems

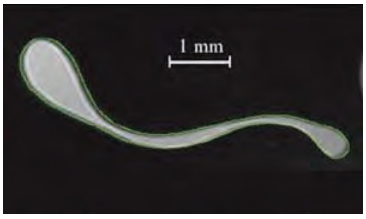
- Fuel Cells and Batteries
- Electrochemical Engineering
- Energy Storage
- Membrane Transport, Fabrication

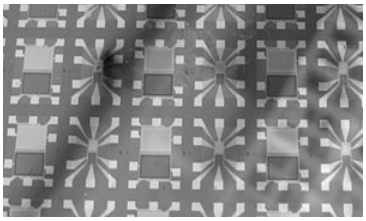
Advanced Materials and Devices

- Synthetic Diamond
- Coatings, Thin Films and Surfaces
- Microsensors
- Polymer Nanocomposites
- Nanomaterials and Nanosynthesis
- Particle Science and Processing
- Molecular Simulations
- Microplasmas and Microreactors

Biological Applications

- Biomedical Sensors and Actuators
- Neural Prosthetic Devices
- Cell and Tissue Engineering
- Transport in Biological Systems





Faculty Members

John C. Angus, Ph.D.
University of Michigan

Harihara Baskaran, Ph.D.
Pennsylvania State University

Donald L. Feke, Ph.D.
Princeton University

Daniel J. Lacks, Ph.D.
Harvard University

Uziel Landau, Ph.D.
UC Berkeley

Chung-Chiun Liu, Ph.D.
Case Institute of Technology

J. Adin Mann, Jr., Ph.D.
Iowa State University

Heidi B. Martin, Ph.D.
Case Western Reserve University

Syed Qutubuddin, Ph.D.
Carnegie-Mellon University

R. Mohan Sankaran, Ph.D.
California Institute of Technology

Robert F. Savinell, Ph.D.
University of Pittsburgh

Jesse S. Wainright, Ph.D.
Case Western Reserve University

For more information on research opportunities, admission, and financial support:

Graduate Coordinator
Department of Chemical Engineering
10900 Euclid Avenue

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E-mail: chemeng@case.edu
Visit: www.case.edu/cse/eche

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Faculty

A.P. Angelopoulos
Gregory Beaucage
Steven Clarson
Carlos Co
Junhang Dong
Rakesh Govind
Vadim Guliants
Chia-chi Ho
Yuen-Koh Kao
Soon-Jai Khang
Vikram Kuppa
Joo-Youp Lee
Dale Schaefer
Vesselin Shanov
Peter Smirniotis
Stephen W. Thiel

Financial Aid Available

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

For Admission Information Contact
Barbara Carter
Graduate Studies Office
College of Engineering and Applied Science
Cincinnati, OH 45221-0077
513-556-5157
Barbara.carter@uc.edu
or
Professor Peter Smirniotis
The Chemical Engineering Program
The School of Energy, Environmental, Biological and Medical Engineering
Cincinnati, Ohio 45221
panagiotis.smirniotis@uc.edu

Engineering Research Center that houses most chemical engineering research.

☐ **Emerging Energy Systems**
Catalytic conversion of fossil and renewable resources into alternative fuels, such as hydrogen, alcohols and liquid alkanes; solar energy conversion; inorganic membranes for hydrogen separation; fuel cells, hydrogen storage nanomaterials

☐ **Environmental Research**
Mercury and carbon dioxide capture from power plant waste streams, air separation for oxycombustion; wastewater treatment, removal of volatile organic vapors

☐ **Molecular Engineering**
Application of quantum chemistry and molecular simulation tools to problems in heterogeneous catalysis, (bio) molecular separations and transport of biological and drug molecules

☐ **Catalysis and Chemical Reaction Engineering**
Selective catalytic oxidation, environmental catalysis, zeolite catalysis, novel chemical reactors, modeling and design of chemical reactors, polymerization processes in interfaces, membrane reactors

☐ **Membrane and Separation Technologies**
Membrane synthesis and characterization, membrane gas separation, membrane filtration processes, pervaporation; biomedical, food and environmental applications of membranes; high-temperature membrane technology, natural gas processing by membranes; adsorption, chromatography, separation system synthesis, chemical reaction-based separation processes

☐ **Biotechnology**
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☐ **Polymers**
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☐ **Bio-Applications of Membrane Science and Technology**
This IGERT program provides a unique educational opportunity for U.S. Ph.D. students in areas of engineering, science, medicine, or pharmacy with above focus. This program is supported by a five-year renewable grant from the National Science Foundation. The IGERT fellowship consists of an annual stipend of $30,000 for up to three years.

☐ **Institute for Nanoscale Science and Technology (INST)**
INST brings together three centers of excellence—the Center for Nanoscale Materials Science, the Center for BioMEMS and Nanobiosystems, and the Center for Nanophotonics—composed of faculty from the Colleges of Engineering, Arts and Sciences, and Medicine. The goals of the institute are to develop a world-class infrastructure of enabling technologies, to support advanced collaborative research on nanoscale phenomena.

CLEMSON

CHEMICAL AND BIOMOLECULAR ENGINEERING

Clemson University boasts a 1,400 acre campus on the shores of Lake Hartwell at the foothills of the Blue Ridge Mountains. The warm campus environment, great weather, and recreational activities make Clemson University an ideal place to live and learn.

ChBE GRADUATE PROGRAM

The Department of Chemical and Biomolecular Engineering offers strong research programs in biotechnology, advanced materials, energy, and modeling and simulation.

Biotechnology: bioelectronics, biosensors and biochips, biopolymers, drug delivery, protein design, bioseparations, bioremediation, and biomass conversion.

Advanced materials: polymer fibers, films and composites, nanoscale design of catalysts, biomaterials, nanomaterials, membranes, directed assembly, and interfacial engineering.

Energy: hydrogen production and storage, biofuels synthesis, sustainable engineering, nanotechnology, reaction engineering, separations, kinetics and catalysis.

Modeling and simulation: rational catalyst design, biological self-assembly, gas hydrates, ice nucleation and growth, and polymer microstructure.

Learn more at
www.clemson.edu/ces/chbe

Clemson ChBE Faculty

Mark A. Blenner, *Asst. Professor*
David A. Bruce, *Professor*
Rachel B. Getman, *Asst. Professor*
Charles H. Gooding, *Professor*
Anthony Guiseppi-Elie, *Prof. & C3B Dir.*
Douglas E. Hirt, *Professor & Chair*
Scott M. Husson, *Prof. & Grad. Coord.*
Christopher L. Kitchens, *Assoc. Professor*
Amod A. Ogale, *Professor & CAEFF Dir.*
Mark E. Roberts, *Asst. Professor*
Sapna Sarupria, *Asst. Professor*
Mark C. Thies, *Professor*

For More Information, Contact:
Graduate Coordinator
shusson@clemson.edu
864-656-3055

Department of Chemical and Biomolecular Engineering
Clemson University, Box 340909
Clemson, South Carolina 29634

Chemical & Biological Engineering

UNIVERSITY OF COLORADO **BOULDER**

Why The University of Colorado Boulder?

-25 faculty performing field-leading research in a variety of areas

-Internationally recognized faculty with numerous awards for their research and teaching

-Outstanding facilities and scientific interactions

The recently constructed Jennie Smoly Caruthers Biotechnology Building is the new ultramodern home to the Department of Chemical and Biological Engineering

Cutting-Edge Research

BIOMATERIALS AND TISSUE ENGINEERING: biocompatible coatings, biosensors, development of new approaches for regenerating damaged or diseased tissues - *K.S. Anseth, C.N. Bowman, S.J. Bryant, J.N. Cha, A.P. Goodwin, J.L. Kaar, M.J. Mahoney, P. Nagal, T.W. Randolph, D.K. Schwartz, J.W. Stansbury*

BIOPHARMACEUTICALS: delivery technologies and stable formulations for new drugs, metabolic engineering, drug delivery - *K.S. Anseth, A. Chatterjee, R.T. Gill, A.P. Goodwin, A. Jayaraman, J.L. Kaar, T.W. Randolph, D.K. Schwartz*

CATALYSIS, SURFACE SCIENCE AND THIN FILM MATERIALS: heterogeneous catalysis, catalysis for biomass conversion, zeolites, atomic and molecular layer deposition - *C.N. Bowman, J.N. Cha, J.L. Falconer, S.M. George, D.L. Gin, J.W. Medlin, C.B. Musgrave, R.D. Noble, D.K. Schwartz, A.W. Weimer*

COMPLEX FLUIDS AND MICROFLUIDIC DEVICES: fluid mechanics of suspensions, gas-particle fluidization, granular flow mechanics - *R.H. Davis, C.M. Hrenya, A. Jayaraman, T.W. Randolph, A.W. Weimer*

COMPUTATIONAL SCIENCE: classical and quantum simulations, computational biology, statistical mechanics, continuum modeling - *A. Chatterjee, R.H. Davis, C.M. Hrenya, A. Jayaraman, J.W. Medlin, C.B. Musgrave*

RENEWABLE ENERGY AND CLEAN ENERGY APPLICATIONS: biofuel, solar energy, carbon capture, high-efficiency synthesis - *J.N. Cha, A. Chatterjee, R.H. Davis, J.L. Falconer, S.M. George, R.T. Gill, D.L. Gin, A.P. Goodwin, C.M. Hrenya, A. Jayaraman, J.W. Medlin, C.B. Musgrave, P. Nagal, R.D. Noble, D.K. Schwartz, M.P. Stoykovich, A.W. Weimer*

MEMBRANES AND SEPARATIONS: inorganic membranes, polymer membranes, ionic liquids - *R.H. Davis, J.L. Falconer, D.L. Gin, R.D. Noble, D.K. Schwartz, A.W. Weimer*

PROTEIN/METABOLIC/GENOMIC ENGINEERING AND SYNTHETIC BIOLOGY: a new approach to understanding and using metabolic processes - A. Chatterjee, R.T. Gill, J.L. Kaar

NANOSTRUCTURED FILMS AND DEVICES: engineering materials at the nanoscale - *C.N. Bowman, J.N. Cha, J.L. Falconer, S.M. George, D.L. Gin, A.P. Goodwin, J.W. Medlin, C.B. Musgrave, P. Nagal, D.K. Schwartz, J.W. Stansbury, M.P. Stoykovich, A.W. Weimer*

POLYMER CHEMISTRY AND ENGINEERING: chemical synthesis, applications of polymers and macromolecules - *K.S. Anseth, C.N. Bowman, S.J. Bryant, J.N. Cha, S.M. George, D.L. Gin, A.P. Goodwin, A. Jayaraman, C.B. Musgrave, T.W. Randolph, J.W. Stansbury, M.P. Stoykovich*

University of Colorado Boulder, Department of Chemical & Biological Engineering, JSCBB, 596 UCB, Boulder, CO 80309
Phone: (303) 492-7471 **Fax:** (303) 492-8425 **Web:** www.colorado.edu/che **Email:** chbegrad@colorado.edu

Colorado State University

Chemical & Biological Engineering

Research Areas

Systems and Synthetic Biology
Sustainable Energy
Biomedical Engineering
Soft Materials
Bioanalytical Devices

Faculty

Travis S. Bailey, Ph.D., U. Minnesota
Laurence A. Belfiore, Ph.D., U. Wisconsin
David S. Dandy, Ph.D., Caltech
J.D. (Nick) Fisk, Ph.D., U. Wisconsin
Matt J. Kipper, Ph.D., Iowa State U.
Christie Peebles, Ph.D., Rice U.
Ashok Prasad, Ph.D., Brandeis U.
Kenneth F. Reardon, Ph.D., Caltech
Brad Reisfeld, Ph.D., Northwestern U.
Christopher D. Snow. Ph.D., Stanford U.
Qiang (David) Wang, Ph.D., U. Wisconsin
A. Ted Watson, Ph.D., Caltech

View faculty and student research videos, find application information, and get other information at ***http://cbe.colostate.edu***

Research

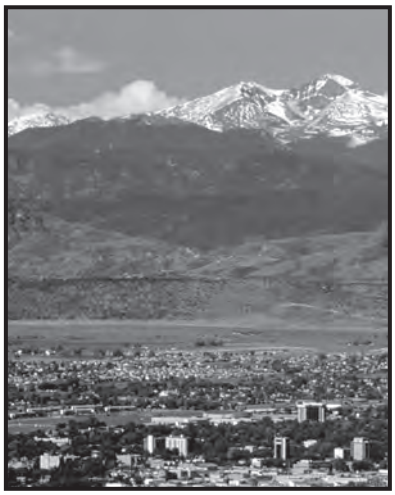
The graduate program in the Department of Chemical and Biological Engineering at Colorado State University offers students a broad range of cutting-edge research areas led by faculty who are world renowned experts in their respective fields. Opportunities for collaboration with many other department across the University are abundant, including departments in the Colleges of Engineering, Natural Sciences, and Veterinary Medicine and Biomedical Sciences.

Financial Support

Research Assistantships pay a competitive stipend. Students on assistantships also receive tuition support. The department has a number of research assistantships. Students select research projects in their area of interest from which a thesis or dissertation may be developed. Additional University fellowship awards are available to outstanding applicants.

Fort Collins

Located in Fort Collins, Colorado State University is perfectly positioned as a gateway to the Rocky Mountains. With its superb climate (over 300 days of sunshine per year), there are exceptional opportunities for outdoor pursuits including hiking, biking, skiing, and rafting.



For additional information or to schedule a visit of campus:

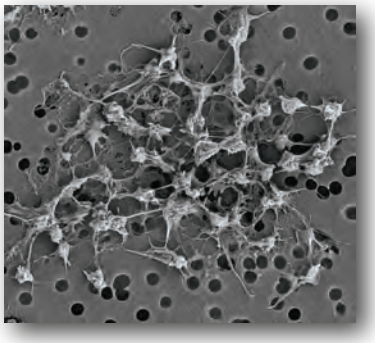
Department of Chemical and Biological Engineering
Colorado State University
Fort Collins, CO 80523-1370
Phone: (970) 491-5253
Fax: (970) 491-7369
E-mail: cbe_grad@colostate.edu

COLORADO SCHOOL OF MINES

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.

With approximately 600-total undergraduate and graduate students and $7-8 million in annual research funding, the Chemical and Biological Engineering Department at CSM maintains a high-quality and dynamic program. Research funding sources include federal agencies such as the NSF, DOE, DARPA, ONR, NREL, NIST, NIH as well as multiple industries. Our research areas include:

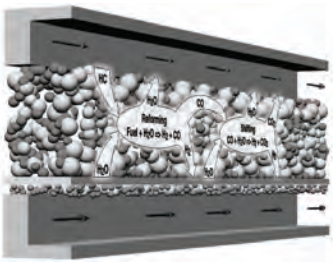
Material Science and Engineering
Organic and inorganic membranes (Way, Herring)
Polymeric materials (Dorgan, D.T. Wu, Liberatore)
Colloids and complex fluids (Marr, D.T. Wu, Liberatore, N. Wu)
Electronic materials (Wolden, Agarwal)
Molecular simulation and modeling (Ely, D.T. Wu, Sum, Maupin)



Biomedical and Biophysics Research
Microfluidics (Marr, Neeves)
Biological membranes (Sum)
Tissue engineering (Krebs)

Energy Research
Fuel cell catalysts and kinetics (Dean, Herring)
H_2 separation and fuel cell membranes (Way, Herring)
Natural gas hydrates (Sloan, Koh, Sum)
Biofuels: Biochemical and thermochemical routes (Liberatore, Herring, Dean, Maupin)

Finally, located at the foot of the Rocky Mountains less than 60 miles from world-class skiing and only 15 miles from downtown Denver, Golden, Colorado 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.



http://chemeng.mines.edu

Faculty

- S. Agarwal (UCSB 2003)
- A.M. Dean (Harvard 1971)
- J.R. Dorgan (Berkeley 1991)
- J.F. Ely (Indiana 1971)
- A. Herring (Leeds 1989)
- C.A. Koh (Brunel 1990)
- M.D. Krebs (Case 2010)
- M.W. Liberatore (Illinois 2003)
- D.W.M. Marr (Stanford 1993)
- C.M. Maupin (Utah 2008)
- R.L. Miller (CSM 1982)
- K.B. Neeves (Cornell 2006)
- E.D. Sloan (Clemson 1974)
- A.K. Sum (Delaware 2001)
- J.D. Way (Colorado 1986)
- C.A. Wolden (MIT 1995)
- D.T. Wu (Berkeley 1991)
- N. Wu (Princeton 2008)

COLUMBIA UNIVERSITY

IN THE CITY OF NEW YORK

Graduate Programs in Chemical Engineering
M.S. and PhD Programs

Faculty and Research Areas

S. BANTA	Protein & Metabolic Engineering
J. CHEN	Surface Science, Catalysis, Electrocatalysis & Alternative Energy
C.J. DURNING	Polymer Physical Chemistry
M. HILL	Design & M.S. Program
J. JU	Genomics
J. KOBERSTEIN	Polymers, Biomaterials, Surfaces, Membranes
S.K. KUMAR	Synthetic & Natural Polymers, Nanomaterials
E.F. LEONARD	Biomedical Engineering, Transport Phenomena
V. FAYE MCNEILL	Environmental Chemical Engineering, Atmospheric Chemistry, Aerosols
V. ORTIZ	Molecular Modeling, Thermodynamics & Statistical Mechanics in Biology
B. O'SHAUGHNESSY	Polymer Physics
A.-H. ALISSA PARK	Sustainable Energy, Carbon Capture & Storage, Particle Technology
N. TURRO	Supramolecular Photochemistry, Interface & Polymer Chemistry
V. VENKATASUBRAMANIAN	Complex Adaptive Systems Engineering, Systemic Risks Management, Materials Design, Informatics and Artificial Intelligence
A.C. WEST	Electrochemical Engineering

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WWW.CHEME.COLUMBIA.EDU

Chemical Engineering Graduate Program at the

University of Connecticut

The Chemical Engineering Program at UConn provides students with a thorough grounding in fundamental chemical engineering principles while offering opportunities and resources to specialize in a wide variety of focus areas.

Faculty are engaged in cutting-edge research, with expertise in fields including but not limited to nanotechnology, biomolecular engineering, green energy, water research, and polymer engineering. Several multidisciplinary centers leverage expertise from diverse departments, colleges, and from the medical school, resulting in a unique set of resources and an extraordinary breadth of education.

Located in idyllic Storrs, the campus maintains its New England charm while being only 20 minutes from Hartford, 75 minutes from Boston and 2 hours from New York.

Research Centers

- Booth Engineering Center for Advanced Technologies
- Center for Clean Energy Engineering
- Center for Environmental Sciences & Engineering
- Institute of Materials Science

Faculty

Alexander Agrios, Northwestern U
Applications of Nanoparticulate Semiconductors to Solar Energy

George Bollas, Aristotle U Thessaloniki
Simulation of Energy Processes, Property Models Development

C. Barry Carter, Oxford U, Cambridge U
Interfaces & Defects; Ceramics, Materials, TEM, SEM, AFM, Energy

Douglas Cooper, U Colorado
Process Modeling & Control

Chris Cornelius, Virginia Tech
Structure, Property and Function of Polymers, Ionomers, Glasses and Composite Materials

Russell Kunz, RPI
Fuel Cell Technology and Electrochemistry

Cato Laurencin, MIT, Harvard U
Advanced Biomaterials, Tissue Engineering, Biodegradable Polymers, Nanotechnology

Yu Lei, UC Riverside
Bionanotechnology, Bio/nanosensor, Bio/nanomaterials, Remediation

Anson Ma, Cambridge U
Nanomaterials, Complex Fluids, Rheology, Microstructure, Processing, Polymers and Carbon Nanotubes

Radenka Maric, Kyoto U
Novel Materials for Fuel Cells & Batteries, Processing Materials, Aerosole & Flame Synthesis

Jeffrey McCutcheon, Yale
Membrane Separations, Polymer Electrospinning, Forward Osmosis/Osmotic Power

Ashish Mhadeshwar, U Delaware
Modeling of Catalytic Fuel Processing, Emissions Reduction, Energy Generation

Trent Molter, UConn
Regenerative Fuel Cells, Hydrogen Production, Electrochemical Compressors, Fuel Cell Materials and Hydrogen Electrolyzers

Willliam Mustain, IIT
Proton Exchange Membrane Fuel Cells, Aerobic Biocathodes for Oxygen Reduction, Electrochemical Kinetics and Ionic Transport

Mu-Ping Nieh, UMass Amherst
Structural Characterization of Soft Materials

Richard Parnas, UCLA
Biodiesel Power Generation, PEM Fuel Cell, Polymer Gels and Filled Polymers

Rampi Ramprasad, U Illinois-Urbana
Materials Modeling and Computation, Nanomaterials, Thin Films & Interfaces

Leslie Shor, Rutgers
Biotechnology, Microfluidics, Microbial Assay Systems

Prabhakar Singh, U Sheffield
High Temperature Materials, Oxidation and Corrosion, Electrochemistry, Fuel Cells

Ranjan Srivastava, U Maryland
Systems Biology & Metabolic Engineering

Steve Suib, U Illinois-Urbana
Inorganic Chemistry, Environmental Chemistry

Kristina Wagstrom, Carnegie Mellon U
Atmosphere Modeling

Yong Wang, Duke U
Nanobiotechnology, Nanomedicine and Drug Delivery

Brian Willis, MIT
Nanotechnology, Molecular, Electronics, Semiconductor Devices and Fuel Cells

Contact

University of Connecticut, Chemical Engineering Program, 191 Auditorium Road, Unit 3222, Storrs, CT 06269-3222
Tel: (860) 486-4020 | Fax: (860) 486-2959 | www.cmbe.engr.uconn.edu

UNIVERSITY OF DELAWARE

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Our graduate students work with a talented and diverse faculty, and there is a correspondingly rich range of research and educational opportunities that are distinctive to Delaware.

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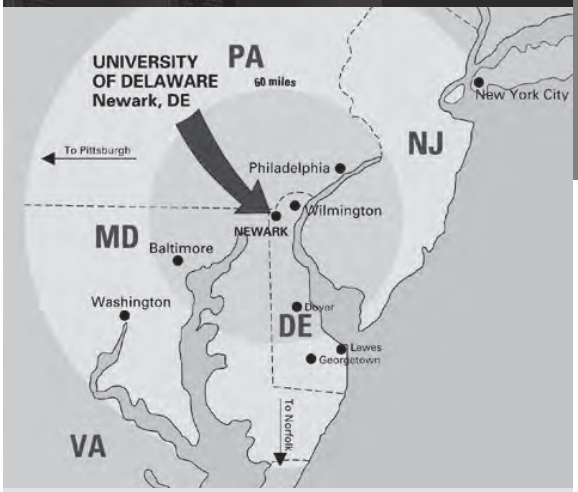

The University of Delaware's central location on the eastern seaboard to New York, Washington, Philadelphia and Baltimore is convenient both culturally and strategically to the greatest concentration of industrial and government research laboratories in the U.S.

26 ChE Faculty *with 13 Named Professors*

- Maciek R. Antoniewicz
- Mark A. Barteau
- Antony N. Beris
- Douglas J. Buttrey
- Wilfred Chen
- David W. Colby
- Pamela L. Cook
- Prasad S. Dhurjati
- Thomas H. Epps, III
- Eric M. Furst
- Feng Jiao
- Michael T. Klein
- April Kloxin
- Kelvin H. Lee
- Abraham M. Lenhoff
- Raul F. Lobo
- Babtunde A. Ogunnaike
- E. Terry Papoutsakis
- Christopher J. Roberts
- T.W. Frasier Russell
- Stanley I. Sandler
- Millicent O. Sullivan
- Dionisios G. Vlachos
- Norman J. Wagner
- Richard P. Wool
- Yushan Yan

Research Areas

- Biomolecular, Cellular, and Protein Engineering
- Catalysis and Energy
- Metabolic Engineering
- Systems Biology
- Soft Materials, Colloids and Polymers
- Surface Science
- Nanotechnology
- Process Systems Engineering
- Green Engineering

Research Centers & Training Programs

Centers and programs provide unique environments & experiences for graduate students. These include:

- Delaware Biotechnology Institute (DBI)
- Center for Catalytic Science and Technology (CCST)
- Center for Molecular and Engineering Thermodynamics (CMET)
- Center for Neutron Science (CNS)
- Center for Composite Material (CCM)
- Chemistry-Biology Interface (CBI)
- Institute for Multi-Scale Modeling of Biological Interactions (IMMBI)
- Solar Hydrogen IGERT

150 Academy Street
Colburn Laboratory, Newark, DE 19716
Phone: 302.831.4061 | Fax: 302.831.3009

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Georgia Tech Chemical & Biomolecular Engineering

DEGREES

Chemical Engineering

Bioengineering

Paper Science and Engineering

CONTACT

Dr. J. Carson Meredith
Associate Chair for Graduate Studies
311 Ferst Drive NW • Atlanta, GA 30332-0100
grad.info@chbe.gatech.edu • www.chbe.gatech.edu
404.894.1838 • 404.894.2866 fax

KEY RESEARCH AREAS

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Catalysis, Reaction Kinetics, Complex Fluids, Microelectronics, Polymers, Microfluidics, Pulp & Paper, Separations, Thermodynamics, MEMS, Environmental Science, CO_2 Capture, Biomedicine, Modeling, Solar Energy, Cancer Diagnostics & Therapeutics, Biofuels, Air Quality, Optimization, Bioinformatics, Process Synthesis & Control, Fuel Cells

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Department of Chemical and Biomolecular Engineering
University of Notre Dame
182 Fitzpatrick Hall
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FACULTY

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

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

Jennifer Fiegel
Johns Hopkins 2004
Drug delivery/ Nano and microtechnology/ Aerosols

Vicki H. Grassian
U. of Calif.-Berkeley 1987
Surface science of environmental interfaces/ Heterogeneous atmospheric chemistry/Applications and implications of nanoscience and nanotechnology in environmental processes and human health

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

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

David Murhammer
U. of Houston 1989
Insect cell culture/ Oxidative Stress/Baculovirus biopesticides

Eric E. Nuxoll
U. of Minnesota 2003
Controlled release/ microfabrication/ drug delivery

Tonya L. Peeples
Johns Hopkins 1994
Extremophile biocatalysis/Sustainable energy/ Green chemistry/ Bioremediation

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

Aliasger K. Salem
U. of Nottingham 2002
Tissue engineering/ Drug delivery/Polymeric biomaterials/Immunocancer therapy/Nano and microtechnology

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

Charles O. Stanier
Carnegie Mellon University 2003
Air pollution chemistry, measurement, and modeling/Aerosols

Venkiteswaran Subramanian
Indian Institute of Science 1978
Biocatalysis/Metabolism/ Gene expression/ Fermentation/Protein purification/Biotechnology

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Biochemical Engineering
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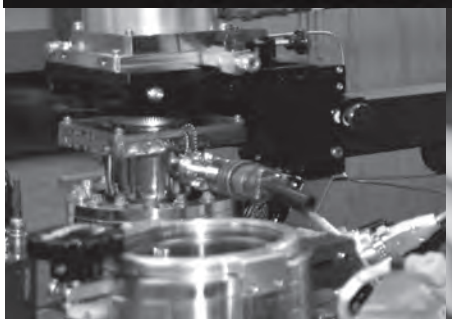


THE DEPARTMENT OF CHEMICAL AND BIOLOGICAL ENGINEERING offers excellent programs for graduate research education in areas important to today's national and global economies: advanced and nanostructured materials, biorenewables, catalysis and reaction engineering, computational fluid dynamics, healthcare technology and biomedical engineering, and renewable energy. Our research crosses traditional and disciplinary lines to provide exceptional opportunities to graduate students. Our diverse faculty are leaders in their fields and have received national and international recognition for their research and education.

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FOR MORE INFORMATION

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FACULTY

Mufit Akinc
PhD, Iowa State University
Processing of bioinspired hybrid materials

Kaitlin Bratlie
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Surface science and catalytic research

Robert C. Brown
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Biorenewable resources for energy

Rebecca Cademartiri
PhD, University of Potsdam, Germany
Interactions of biological entities with materials

Eric W. Cochran
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Self-assembled polymers

Liang Dong
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Bioengineering, microelectronics and photonics

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PhD, Kansas State University
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PhD, University of Wisconsin
Bioprocessing and bioseparations

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Tissue engineering and gene delivery

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Heterogeneous catalysis and biorenewables

Jacqueline V. Shanks
PhD, California Institute of Technology
Metabolic engineering and plant biotechnology

Zengyi Shao
PhD, University of Illinois
Biorenewables production by metabolic engineering

Jean-Philippe Tessonnier
PhD, Universite de Strasbourg, France
Heterogeneous catalysis and biorenewables

R. Dennis Vigil
PhD, University of Michigan
Transport phenomena and reaction engineering in multiphase systems

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Y. T. Cheng • California Institute of Technology
R. Eitel • Pennsylvania State University
B. Hinds • Northwestern University
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high temperature processes and materials • environmental processes • reaction engineering

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Alice P. Gast, *Princeton University*
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Andrew Klein, *North Carolina State University*
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Christopher J. Kiely, *Bristol University*
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Jeetain Mittal, *University of Texas*
protein folding • macromolecular crowding • hydrophobic effects • nanoscale transport

Susan F. Perry, *Pennsylvania State University*
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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

Shivaji Sircar, *University of Pennsylvania*
adsorption • gas and liquid separation

Mark A. Snyder, *University of Delaware*
inorganic nanoparticles and porous thin films • membrane separations • multiscale modeling

Kemal Tuzla, *Istanbul Technical University*
heat transfer • two-phase flows • fluidization • thermal energy storage

Israel E. Wachs, *Stanford University*
materials characterization • surface chemistry • heterogeneous catalysis • environmental catalysis

An application and additional information may be obtained by writing to:
Dr. Jeetain Mittal or Dr. Steve McIntosh: Co-chairs, Graduate Admissions Committee
Department of Chemical Engineering, Lehigh University • 111 Research Drive, Iacocca Hall • Bethlehem, PA 18015
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PROGRAM DESCRIPTION

Students pursuing advanced studies in the Department of Chemical and Biochemical Engineering at UMBC explore fundamental concepts in biochemical, biomedical and bioprocess engineering, with faculty at the leading-edge of engineering research. The department offers graduate programs leading to B.S./M.S., M.S. and Ph.D. degrees. These graduate programs provide students with the opportunity to play an active role in breakthrough research and specific projects cover a wide range of areas including: fermentation, cell culture, downstream processing, cellular and tissue engineering as well as mathematical modeling.

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The program's research facilities include state-of-the-art laboratories in the Engineering Building and at the Technology Research Center. These facilities are extensively equipped with modern fermentation, cell culture, separations, protein structure and materials characterization, biomaterials synthesis and other analytical equipment. In addition, campus core facilities in areas such as microscopy and mass spectrometry provide students opportunities for hands-on exposure to cutting edge analytical techniques and equipment.

LOCATION

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

FACULTY

BAYLES, TARYN, Ph.D., University of Pittsburgh; Engineering education and outreach, transport phenomena

CASTELLANOS, MARIAJOSE, Ph.D., Cornell University; Biocomplexity, modeling of biological systems

FREY, DOUGLAS, Ph.D., University of California, Berkeley; Chromatographic separations, electrophoresis

GOOD, THERESA, Ph.D., University of Wisconsin-Madison; Cellular engineering, protein aggregation and disease, biomedical engineering

LEACH, JENNIE, Ph.D., University of Texas at Austin; Biomaterials, tissue engineering

MARTEN, MARK, Ph.D., Purdue University; Systems biology, proteomics and genomics, bioprocessing

MOREIRA, ANTONIO R., Ph.D., University of Pennsylvania; Regulatory/GMP issues, scale up, downstream processing, product comparability

RAO, GOVIND, Ph.D., Drexel University; Fluorescence-based sensors and instrumentation, fermentation, cell culture

ROSS, JULIA, Ph.D., CHAIR; Rice University; Cell and tissue engineering, cell adhesion in microbial infection, thrombosis

Research Associate Professors

KOSTOV, YORDAN, Ph.D., Bulgarian Academy of Sciences; Low-cost optical sensors, instrumentation development, biomaterials

TOLOSA, LEAH, Ph.D., University of Connecticut, Storrs; Fluorescence based sensors, protein engineering, biomedical diagnostics, molecular switches

Research Assistant Professor

GE, XUDONG, Ph.D., UMBC; Sensor matrix development, dialysis based sensor

FOR MORE INFORMATION

Department Web Site:
www.umbc.edu/cbe

CONTACT:

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UMBC, Chemical & Biochemical Engineering
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Baltimore, MD 21250

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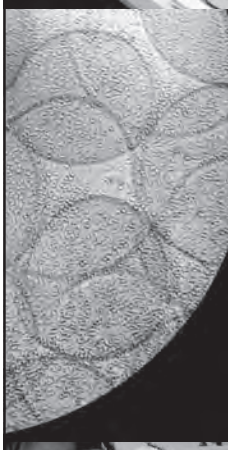

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Located in a vibrant international community just outside of Washington, D.C. and close to major national laboratories including the NIH, the FDA, the Army Research Laboratory, and NIST, the University of Maryland's Department of Chemical and Biomolecular Engineering, part of the A. James Clark School of Engineering, offers educational opportunities leading to a Doctor of Philosophy or Master of Science degree in Chemical Engineering.

FACULTY

SHERYL H. EHRMAN, CHAIR
Aerosol science, particle technology, air pollution.

RAYMOND A. ADOMAITIS
Systems modeling/simulation, semiconductor materials manufacturing.

MIKHAIL ANISIMOV
Mesoscopic and nanoscale thermodynamics, critical phenomena, phase transitions in soft matter.

RICHARD V. CALABRESE
Multiphase flow, turbulence and mixing.

KYU YONG CHOI
Polymer reaction engineering and polymer nanomaterials.

PANAGIOTIS DIMITRAKOPOULOS
Computational fluid dynamics, bio/micro-fluidics, biophysics and numerical analysis.

AMY J. KARLSSON
Protein engineering, biomolecular recognition, fungal disease.

JEFFERY KLAUDA
Cell membrane biophysics, thermodynamics, molecular simulations.

DONGXIA LIU
Materials synthesis and engineering, reaction engineering, heterogeneous catalysis, fuel cells, biofuels, energy.

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GANESH SRIRAM
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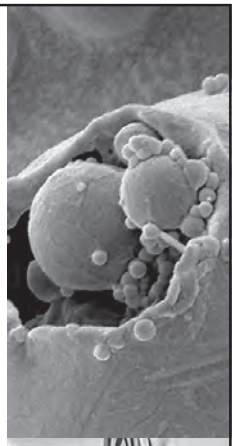


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or contact:
Graduate Program Director
Department of Chemical Engineering
159 Goessmann Lab., 686 N. Pleasant St.
University of Massachusetts
Amherst, MA 01003-9303
Email: chegradprog@ecs.umass.edu

Facilities:

Instructional, research, and administrative facilities are housed in close proximity to each other. In addition to space in Goessmann Laboratory, the Department occupies modern research space in Engineering Laboratory II and the Conte National Center for Polymer Research. In 2013, several faculty with research interests in the life sciences will occupy modern research space in the New Laboratory Sciences Building that is currently under construction.

Faculty:

Surita R. Bhatia (*Princeton*)
W. Curtis Conner, Jr. (*Johns Hopkins*)
Paul J. Dauenhauer (*Minnesota*)
Jeffrey M. Davis (*Princeton*)
Wei Fan *(Tokyo)*
Neil S. Forbes (*California, Berkeley*)
David M. Ford (*Pennsylvania*)
Michael A. Henson (*California, Santa Barbara*)
Michael F. Malone (*Massachusetts, Amherst*)
Dimitrios Maroudas (*MIT*)
Peter A. Monson (*London*)
T. J. (Lakis) Mountziaris, Department Head (*Princeton*)
Shelly R. Peyton *(California, Irvine)*
Constantine Pozrikidis (*Illinois, Urbana-Champaign*)
Susan C. Roberts (*Cornell*)
Jessica D. Schiffman (*Drexel*)
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Current areas of Ph.D. research in the Department of Chemical Engineering receive support at a level of over $6 million per year through external research grants. Examples of research areas include, but are not limited to, the following.

- **Bioengineering:** cellular engineering; metabolic engineering ; targeted bacteriolytic cancer therapy; synthesis of small molecules; systems biology; biopolymers; nanostructured materials for clinical diagnostics.
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- **Fluid Mechanics and Transport Phenomena:** biofluid dynamics and blood flow; hydrodynamics of microencapsulation; mechanics of cells, capsules, and suspensions; modeling of microscale flows; hydrodynamic stability and pattern formation; interfacial flows; gas-particle flows.
- **Materials Science and Engineering:** design and characterization of new catalytic materials; nanostructured materials for microelectronics and photonics; synthesis and characterization of microporous and mesoporous materials; colloids and biomaterials; membranes; biopolymers; rheology and phase behavior of associative polymer solutions; polymeric materials processing.
- **Molecular and Multi-scale Modeling & Simulation:** computational quantum chemistry and kinetics; molecular modeling of nanostructured materials; molecular-level behavior of fluids confined in porous materials; molecular-to-reactor scale modeling of transport and reaction processes in materials synthesis; atomistic-to-continuum scale modeling of thin films and nanostructures; systems-level analysis using stochastic atomic-scale simulators; modeling and control of biochemical reactors; nonlinear process control theory.

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Chemical Engineering

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For more information, contact

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Electrochemical energy storage and conversion, porous materials characterization, multiphase transport phenomena [jeff.gostick@mcgill.ca]

R. J. HILL, Canada Research Chair (Cornell)
Fuzzy colloids, biomimetic interfaces, hydrogels, and nanocomposite membranes [reghan.hill@mcgill.ca]

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Biofluid dynamics, biomechanics, tissue engineering, developmental biology & microscopy [liz.jones@mcgill.ca]

M. R. KAMAL, Emeritus Professor (Carnegie-Mellon)
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A.-M. KIETZIG, (British Columbia)
Functional surface engineering, material processing with lasers, interfacial phenomena [anne.kietzig@mcgill.ca]

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Block copolymers for nano-porous media, organic electronics, controlled release; "green" plasticisers [milan.maric@mcgill.ca]

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Plasma science & technology, deposition techniques for surface modifications, nanomaterials [jean-luc.meunier@mcgill.ca]

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Biomaterials, protein/material interactions, bio/immunosensors, (bio)electrochemistry [sasha.omanovic@mcgill.ca]

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We offer a Ph. D. program and two Master's options (Thesis or Project) in the following research areas:

- **Biomaterials:** Tissue engineering, biomedical engineering, blood-material interactions
  J.L. Brash (Emeritus), K. Jones, H. Sheardown
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  C. Filipe, T. Hoare, R. Ghosh , D. Latulippe
- **Membranes:** Fabrication, characterization, and transport phenomena
  J. Dickson (Emeritus), C. Filipe, R. Ghosh , D. Latulippe
- **Polymer Science:** Interfacial engineering, polymerization, polymer characterization, synthesis
  E. Cranston, T. Hoare, R. H. Pelton, S. Zhu
- **Polymer Engineering:** Polymer processing, rheology, computer modelling, extrusion
  M. Thompson, J. Vlachopoulos (Emeritus), S. Zhu
- **Process Systems Engineering:** Multivariate statistical methods, computer process control, optimization
  T. Adams V. Mahalec, T. E. Marlin, (Emeritus) P. Mhaskar, C. L. E. Swartz, J. Yu

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- Centre for Advanced Polymer Processing & Design (CAPPA-D)
- McMaster Institute of Polymer Production Technology (MIPPT)
- McMaster Advanced Control Consortium (MACC)

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Hamilton, ON L8S 4L7
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Faculty and Program

- 34 faculty with diverse research topics
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- 11 faculty with national awards for research and teaching
- 6 textbooks/monographs
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Research Areas

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Catalysis
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Complex Fluids
Computational Chemistry
Drug Delivery
Electrochemical Engineering
Fuel Cells
Microfluidics
Molecular Simulation
Nanomaterials
Polymers
Surface Science
Sustainable Energy
Systems Biology

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- *Coating Processes and Interfacial Engineering*
- *Crystal Growth and Design*
- *Electronic, Photonic and Magnetic Materials*
- *Energy*
- *Fluid Mechanics*
- *Polymers*
- *Reaction Engineering and Chemical Process Synthesis*
- *Theory and Computation*

Downtown Minneapolis as seen from campus
Photo Credit; Patrick O'Leary

The Crucible, outside of Amundson Hall
Photo Credit: Patrick O'Leary

The Department of Chemical Engineering and Materials Science at the University of Minnesota-Twin Cities has been renowned for its pioneering scholarly work and for its influence in graduate education for the past half-century. Our department has produced numerous legendary engineering scholars and current leaders in both academia and industry. With its pacesetting research and education program in chemical engineering encompassing reaction engineering, multiphase flow, statistical mechanics, polymer science and bioengineering, our department was the first to foster a far-reaching marriage of the Chemical Engineering and Materials Science programs into an integrated department.

For the past few decades, the chemical engineering program has been consistently ranked as the top graduate program in the country by the National Research Council and other ranking surveys. The department has been thriving on its ability to foster interdisciplinary efforts in research and education; most, if not all of our active faculty members are engaged in intra- or interdepartmental research projects. The extensive collaboration among faculty members in research and education and the high level of co-advising of graduate students and research fellows serves to cross-fertilize new ideas and stimulate innovation. Our education and training are known not only for rigorously delving into specific and in-depth subjects, but also for their breadth and global perspectives. The widely ranging collection of high-impact research projects in these world-renowned laboratories provides students with a unique experience, preparing them for careers that are both exciting and rewarding.

Faculty:

Eray Aydil
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Aditya Bhan
Matteo Cococcioni
Edward L. Cussler
Prodromos Daoutidis
Jeffrey J. Derby
Kevin Dorfman
David Flannigan
Lorraine F. Francis
C. Daniel Frisbie
William W. Gerberich
Benjamin Hackel
Russell J. Holmes
Wei-Shou Hu
Bharat Jalan
Yiannis Kaznessis
Efrosini Kokkoli
Satish Kumar
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Downtown Saint Paul
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University of Missouri
CHEMICAL ENGINEERING

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Matthew T. Bernards, PhD (Washington–Seattle)
Biomaterials ♣ Tissue Engineering ♣ Surface Science
Paul C. H. Chan, PhD (CalTech)
Reactor Analysis ♣ Fluid Mechanics
Thomas R. Marrero, PhD (Maryland)
Coal Log Transport ♣ Conducting Polymers ♣ Fuels Emissions
Patrick J. Pinhero, PhD (Notre Dame)
Nuclear Materials Science ♣ Surface Science ♣ Environmental Degradation
David G. Retzloff, PhD (Pittsburgh)
Reactor Analysis ♣ Materials
Galen J. Suppes, PhD (Johns Hopkins)
Biofuel Processing ♣ Renewable Energy ♣ Thermodynamics
Yangchuan Xing, PhD (Johns Hopkins)
PEM Fuel cells and LI batteries ♣ Electrocatalysis/Energy Conversion ♣ Photocatalysis for decontamination

ABOUT US

The University of Missouri is one of the most comprehensive institutions in the nation and is situated on a beautiful land grant campus halfway between St. Louis and Kansas City, and a little over an hour from the recreational Lake of the Ozarks. The Department of Chemical Engineering offers MS and PhD programs in addition to its undergraduate BS degree. Program areas include: surface science, nuclear waste, biodegradation, biomaterials, nanomaterials, ionic liquids, tissue engineering, chemical kinetics, photocatalysis, ceramic materials, and nuclear materials science. Faculty expertise encompasses a wide variety of specializations and research within the department is funded by industry, government, non-profit and institutional grants in many research areas.

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D. Forciniti

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X. Liang

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The Program

The department offers graduate programs leading to both the Master of Science and Doctor of Philosophy degrees. Exciting opportunities exist for interdisciplinary research. Faculty conduct research in a number of areas including:

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- **Nanotechnology**
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The Faculty:

P. Armenante: University of Virginia
B. Baltzis: University of Minnesota
R. Barat: Massachusetts Institute of Technology
E. Bilgili: Illinois Institute of Technology
R. Dave: Utah State University
E. Dreizin: Odessa University, Ukraine
C. Gogos: Princeton University
T. Greenstein: New York University
D. Hanesian: Cornell University
K. Hyun: University of Missouri-Columbia
B. Khusid: Heat and Mass Transfer Inst., Minsk USSR
N. Loney: New Jersey Institute of Technology
K. Mihlbachler: Otto-Von-Guericke Universitat, Germany
A. Perna: University of Connecticut
R. Pfeffer: (Emeritus); New York University
D. Sebastian: Stevens Institute of Technology
L. Simon: Colorado State University
K. Sirkar: University of Illinois-Urbana
R. Tomkins: University of London (UK)
X. Wang: Virginia Tech
M. Xanthos: University of Toronto (Canada)
M. Young: Stevens Institute of Technology

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The department enjoys extensive interactions and collaborations with New Mexico's federal laboratories: Los Alamos National Laboratory, Sandia National Laboratories, and the Air Force Research Laboratory, as well as high technology industries both locally and nationally.

Albuquerque is a unique combination of old and new, the natural world and the manmade environment, the frontier town and the cosmopolitan city, a harmonious blend of diverse cultures and peoples.

Faculty	Research Areas
Plamen Atanassov	• Electroanalytical Chemistry, Biomedical Engineering
C. Jeffrey Brinker	• Ceramics, Sol-Gel Processing, Self-assembled Nanostructures
Heather Canavan	• Stimulus-responsive materials, cell/surface interactions, Biomedical Engineering
Joseph L. Cecchi	• Semiconductor Manufacturing Technology, Plasma Etching and Deposition
Eva Chi	• Protein interfacial dynamics, protein aggregation, protein misfolding diseases
Abhaya K. Datye	• Catalysis, Interfaces, Advanced Materials
James Freyer	• Tumor Models, Flow Cytometry, Perfusion Systems, Metabolomics
Elizabeth L. Dirk	• Biomaterials, Tissue Engineering
Julia E. Fulghum	• Surface Characterization, 3-D Materials Characterization
Steven Graves	• Biomolecular Assemblies, Protease Mechanisms, Flow Cytometry
Sang Eon Han	• Nanophotonics, Thermal Physics, Solar Energy Harvesting and Conversion
Sang M. Han	• Semiconductor Manufacturing Technology, Plasma Etching and Deposition
Ronald E. Loehman	• Glass-Metal and Ceramic-Metal Bonding and Interfacial Reactions
Dimiter Petsev	• Complex fluids, Nanoscience, Electrokinetic phenomena
Randall Schunk	• Computational Fluid Mechanics, Polymer Processing, Nanomanufacturing
Andrew Shreve	• Biological and Soft Nanomaterials, Spectroscopy, Optical Sensing/Diagnostics
Timothy L. Ward	• Aerosol Materials Synthesis, Inorganic Membranes
David G. Whitten	• Biosensors, Conjugated Polymer Photophysics and Bioactivity

For more information, contact:

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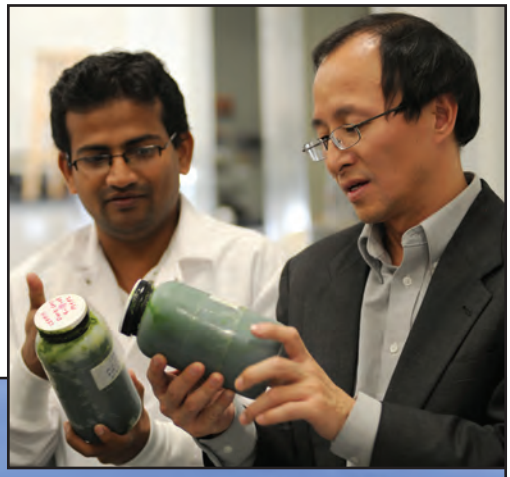
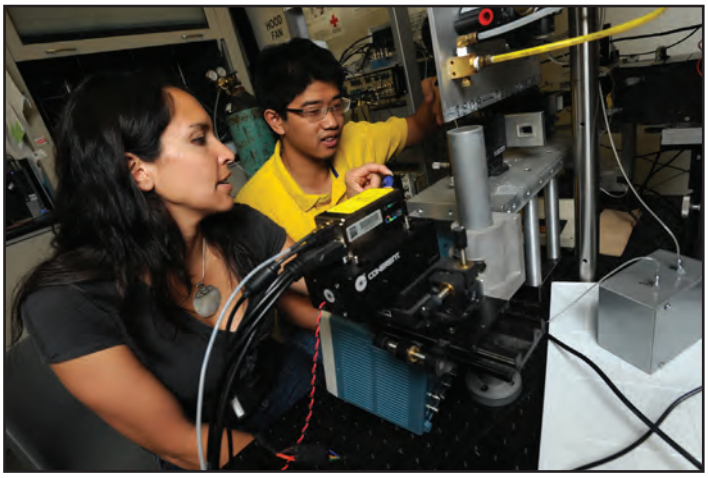


Faculty and Research Areas

- **Paul K. Andersen,** Associate Professor and Associate Department Head (University of California, Berkeley) *Transport Phenomena, Electrochemistry, Environmental Engineering*
- **Catherine E. Brewer,** Assistant Professor *(Iowa State University) Characterization and Engineering of Biochar*
- **Shuguang Deng,** Professor (University of Cincinnati) *Advanced Materials for Sustainable Energy and Clean Water, Adsorption, and Membrane Separation Processes*
- **Abbas Ghassemi,** Professor and Director of the Institute for Energy and the Environment (New Mexico State University) *Risk-Based Decision Making, Environmental Studies Pollution Prevention, Energy Efficiency and Advanced Water Treatment; Renewable Energy*
- **Jessica Houston,** Assistant Professor (Texas A&M University) *Biomedical Engineering, Biophotonics, Flow Cytometry*
- **Hongmei Luo,** Assistant Professor *(Tulane University) Electrodeposition, Nanostructured Materials, Metal Oxide, Nitride, Composite Thin Films, Magnetism, Photocatalysts and Photovoltaics*
- **Thomas A. Manz,** Assistant Professor *(Purdue University) computational chemistry study of advanced materials and transition metal catalysts*
- **Julio A. Martinez,** Assistant Professor *(University of California, Davis) semiconductor device physics, nanowire and nanostructure device integration*
- **Martha C. Mitchell,** P.E., Associate Dean of Research *(University of Minnesota) Molecular Modeling of Adsorption in Nanoporous Materials, Thermodynamic Analysis of Aerospace Fuels, Statistical Mechanics*
- **David A. Rockstraw,** P.E., Distinguished Achievement Professor and Head *(University of Oklahoma) Kinetics and Reaction Engineering; Process Design, Economic Analysis, and Simulation*



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Northwestern Engineering

Chemical and Biological Engineering

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

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

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

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

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

Michael C. Jewett, Ph.D., Stanford, 2005
Synthetic biology, systems biology, metabolic engineering

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

Joshua N. Leonard, Ph.D., Berkeley, 2006
Cellular & biomolecular engineering for medicine, systems biology

Phillip B. Messersmith, Ph.D.,
University of Illinois at Urbana-Champaign
Biomimetic/Bioinspired materials

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

Chad Mirkin, Ph.D., Penn State, 1986
Inorganic, materials, physical/analytical

Justin M. Notestein, Ph.D., Berkeley, 2006
Materials design for adsorption and catalysis

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

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

George C. Schatz, Ph.D.,
California Institute of Technology Research
Materials, physical/analytical

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

Igal Szleifer, Ph.D., Hebrew University, 1989
Molecular modeling of biointerphases

John M. Torkelson, Ph.D., Minnesota, 1983
Polymer science, polymer physics

Keith Tyo, Ph.D.,
Massachusetts Institute of Technology, 2008
Synthetic biology, metabolic engineering, global health delivery

Fengqi You, Ph.D.,
Carnegie Mellon University, 2009
Process systems engineering, sustainable process design, synthesis

Neda Bagheri, Ph.D.,
University of California, Santa Barbara, 2007
Computational systems biology; dynamical systems and control theory; applications to immunology, cancer, and circadian rhythms

Eric Masanet, Ph.D.,
University of California-Berkeley, 2004
Multi-scale and techno-economic modeling of energy, resource, and product life-cycle systems

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Aravind R. Asthagiri, ***Carnegie Mellon***
Developing and applying multi-scale modeling methods to predict material properties entirely from first-principles atomistic simulations

Bhavik R. Bakshi, ***MIT***
Industrial ecology, process engineering, and analysis of complex systems

Robert S. Brodkey, ***University of Wisconsin***
Experimental measurements for validation of computational fluid mechanics and applications to mixing process applications

Jeffrey J. Chalmers, ***Cornell University***
Immunomagnetic cell separation, effect of hydrodynamic forces on cells, interfacial phenomena and cells, bioengineering, biotechnology, and cancer detection

Stuart L. Cooper, ***Princeton University***
Polymer science and engineering, properties of polyurethanes and ionomers, polyurethane biomaterials, blood-material interactions, and tissue engineering

Liang-Shih Fan, ***West Virginia University***
Fluidization, particle technology, and particulates reaction engineering

Martin Feinberg, ***Princeton University***
Mathematics of complex chemical systems

Lisa Hall, ***University of Illinois at Urbana-Champaign***
Modeling and simulation of multiphase polymer systems

Winston Ho, ***University of Illinois at Urbana-Champaign***
Membrane separations with chemical reaction and fuel-cell fuel Processing

Kurt W. Koelling, ***Princeton University***
Rheology, polymer processing, and microfluidics

Isamu Kusaka, ***CalTech***
Statistical mechanics and nucleation

L. James Lee, **University of** ***Minnesota***
Polymer and composite processing, micro/nano-fabrication, and bioMEMS

Umit S. Ozkan, ***Iowa State University***
Heterogeneous catalysis, kinetics, and catalytic materials

Andre F. Palmer, ***Johns Hopkins***
Artificial blood substitutes, protein and tissue engineering, drug delivery, and Rheo-optics of complex fluids

Michael Paulaitis, ***University of Illinois***
Molecular simulations and modeling of weak protein-protein interactions, the role of hydration in biological organization and self-assembly phenomena, and multiscale modeling of biological interactions

James F. Rathman, ***University of Oklahoma***
Colloids, interfaces, surfactants, molecular self-assembly, and bioinformatics

David L. Tomasko, ***University of Illinois at Urbana-Champaign***
Separations, molecular thermodynamics, and materials processing in supercritical fluids

Jessica O. Winter, ***University Of Texas at Austin***
Nanobiotechnology, cell and tissue engineering, and neural prosthetics

David Wood, ***Rensselaer Polytechnic Institute***
Biotechnology development through protein engineering, commodity enzyme production, therapeutic protein development and high-throughput screening

Barbara E. Wyslouzil, ***CalTech***
Nucleation, aerosol formation, growth and transport, atmospheric aerosols, thermodynamics, and phase equilibria

Shang-Tian Yang, ***Purdue University***
Biochemical engineering, biotechnology, and tissue engineering

Jacques L. Zakin, ***New York University***
Rheology, drag reduction, surfactant microstructures, and heat transfer enhancement

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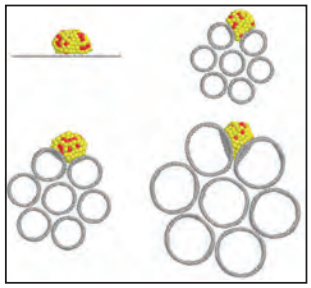

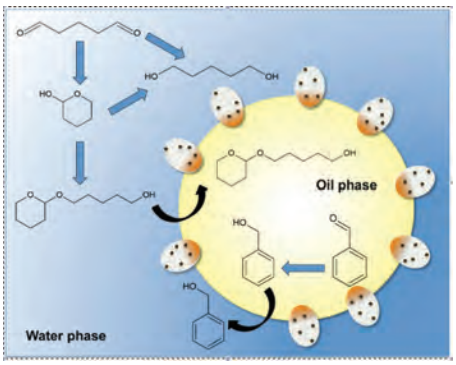

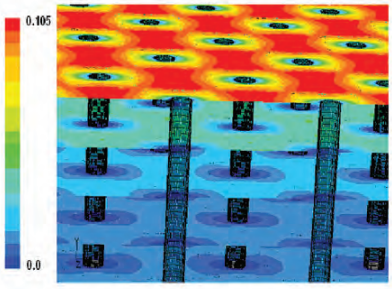

Research Areas

Bioengineering/Biomedical Engineering

Genetic engineering, protein production, bioseparations, metabolic engineering, biological transport, cancer treatment, cell adhesion, biosensors, orthopedic tissue engineering.

Energy and Chemicals

Biofuels and catalytic biomass conversion, catalytic hydrocarbon processing, plasma processing, data reconciliation, process design retrofit and optimization, molecular thermodynamics, computational modeling of turbulent transport and reactive flows, detergency, improved oil recovery.

Materials Science and Engineering

Single wall carbon nanotube production and functionalization, surface characterization, polymer melt blowing, polymer characterization and structure-property relationships, polymer nanolayer formation and use, biomaterials.

Environmental Processes

Zero-discharge process engineering, soil and aquifer remediation, surfactant-based water decontamination, sustainable energy processes.

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http://www.ou.edu/coe/cbme.html

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Miguel J. Bagajewicz
Ph.D. California Institute of Technology, 1987

Steven P. Crossley
Ph.D. University of Oklahoma, 2009

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Ph.D. University of Wisconsin-Madison, 1994

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Ph.D. University of Wisconsin-Madison, 1975

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Ph.D. University of Texas, Austin, 1983

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Ph.D. MIT, 2006

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Ph.D. Ludwig-Maximilians-Universität München, Germany, 1994

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Ph.D. University of Houston, 1987

Richard G. Mallinson
Ph.D. Purdue University, 1983

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Ph.D. Cornell University, 1987

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Ph.D. Rice University, 1981

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Ph.D. University of Illinois at Urbana-Champaign, 1996

Daniel E. Resasco
Ph.D. Yale University, 1983

David W. Schmidtke
Ph.D. University of Texas, Austin, 1980

Robert L. Shambaugh
Ph.D. Case Western Reserve University, 1976

Vassilios I. Sikavitsas
Ph.D. University of Buffalo, 2000

Alberto Striolo
Ph.D. University of Padova, Italy, 2002

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E-mail: chegrad@ou.edu,
Phone: (405)-325-5811,
(800) 601-9360,
Fax: (405) 325-5813

Oklahoma State University
School of Chemical Engineering
Graduate Program

Faculty


Clint Aichele


Heather Fahlenkamp


Khaled Gasem


Martin S. High


Sundararajan Madihally


R. Russell Rhinehart


J. Rob Whiteley


Peter Clark


Gary Foutch


Karen High

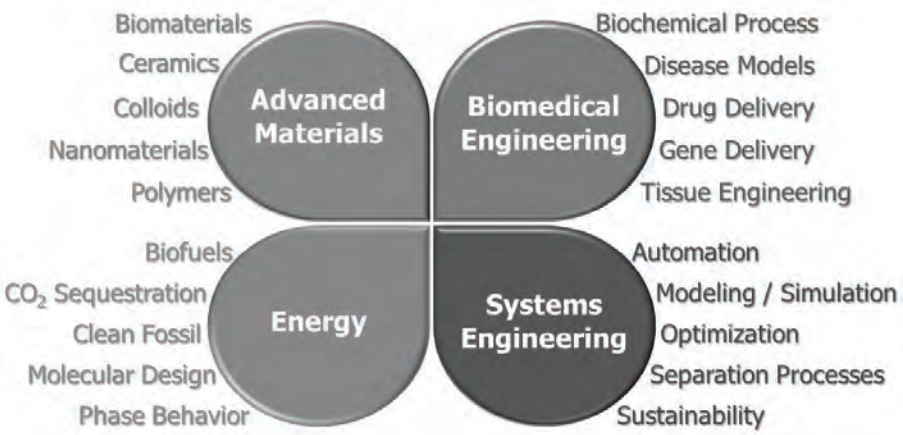

Arland Johannes


Joshua Ramsey


James Smay


Qingsheng Wang

Research Areas



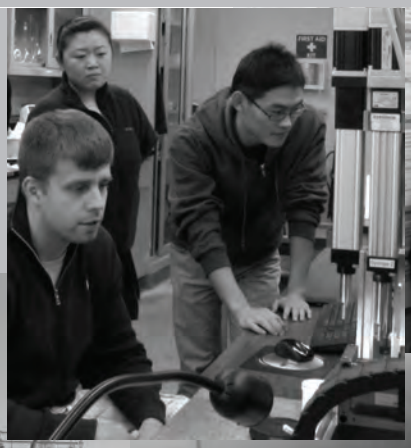
We offer programs leading to M.S. and Ph.D. degrees.

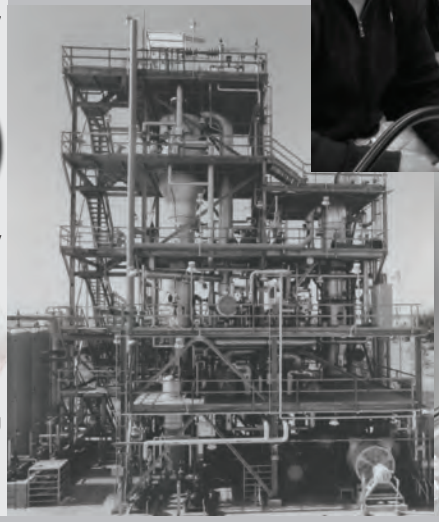
For detailed information, visit:

www.che.okstate.edu

Contact

Dr. Sundar Madihally
Graduate Program Director
School of Chemical Engineering
Oklahoma State University
423 Engineering North
Stillwater, OK 74078
Phone: (405) 744-5280





Email: chegradprogram@okstate.edu

Oregon State University
School of Chemical, Biological and Environmental Engineering

Oregon State University (OSU) is a leading research university located in one of the safest, smartest and greenest cities in the nation. OSU holds the Carnegie Foundation's top designation for research institutions. The School of Chemical, Biological and Environmental Engineering (CBEE) is one of four schools within the College of Engineering at OSU providing MEng, MS and PhD degrees in both Chemical and Environmental Engineering.

Faculty

Liney Arnadottir *U of Washington*
Joseph Baio *U of Washington*
Michelle Bothwell *Cornell*
Chih-hung Chang *U of Florida*
Mark Dolan *Stanford*
Dan Euhus *Georgia Tech*
Stacey Harper *U of Nevada*
Greg Herman *U of Hawaii*
Adam Higgins *Georgia Tech*
Goran Jovanovic *Oregon State*
Christine Kelly *U of Tennessee*
Milo Koretsky *UC Berkeley*
Keith Levien *U of WI Madison*
Joe McGuire *NC State U*
Jeff Nason *U of Texas*
Skip Rochefort *UC San Diego*
Greg Rorrer *Michigan State*
Karl Schilke *Oregon State*
Lew Semprini *Stanford*
D. Wildenschild *Tech U Denmark*
Brian Wood *UC Davis*
Alex Yokochi *Texas A&M*

Research

* Renewable Energy
* Microtechnology for Chemical Processing
* Thin Film Materials, Nanomaterials and Nanotechnology
* Biomaterials & Therapeutics
* Subsurface Processes & Bioremediation
* Bioprocess Engineering
* Engineering Education and STEM Research

For more information regarding our Graduate Programs call, email or visit us online:
541-737-6149
cbee-gradinfo@engr.orst.edu
http://cbee.engr.oregonstate.edu

Oregon State UNIVERSITY

University of Pennsylvania
Chemical and Biomolecular Engineering

Paulo E. Arratia *Biomechanics, fluid mechanics, mechanics of materials, complex and biofluid dynamics, multiphase flows*

Tobias Baumgart *Physical chemistry and mechanics of biological membranes, cell/surface interactions*

Christopher S. Chen *Stem cell differentiation, angiogenesis, engineering extracellular matrix, cell cell adhesion, mechanotransduction, multicellularity*

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

John C. Crocker *Single-molecule biophysics, cell mechanics, soft glasses*

Scott L. Diamond *Protein and gene delivery, mechano-biology, blood systems biology, drug discovery*

Dennis E. Discher *Polymersomes, protein folding, stem cell rheology, gene and drug delivery*

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

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

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

Matthew J. Lazzara *Cellular engineering, cell signaling, molecular therapeutics*

Daeyeon Lee *Surface and interface science; polymer/nanoparticle thin films; microfluidics; emulsion science; stimuli-responsive microcapsules*

Amish J. Patel *Biological self-assembly, desalination, solvation in nano-confined geometries, li-ion batteries, nano-structured polymers*

Ravi Radhakrishnan *Statistical mechanics, quantum chemistry, biomolecular and cellular signaling*

Robert A. Riggleman *Molecular modeling, statistical mechanics, and polymer glasses*

Casim A. Sarkar *Biomolecular engineering, cellular engineering, biotechnology*

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

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

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

Kathleen J. Stebe *Nanomaterials, surfaces and interfaces, dynamics of self assembly, surfactants*

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

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

Shu Yang *Synthesis, characterization and fabrication of functional polymers, and organic/inorganic hybrids*

Penn's graduate program *in chemical and biomolecular engineering provides flexibility while emphasizing the fundamental nature of chemical and physical processes. Students may focus their studies in any of the research areas of the department. The full resources of this Ivy League university, including the Wharton School of Business and one of the country's foremost medical centers, are available to students in the program. The cultural advantages, historical assets, and recreational facilities of a great city are within walking distance of the university.*

For additional information, write:

Director of Graduate Admissions
Chemical and Biomolecular Engineering
University of Pennsylvania
220 South 33rd Street, Rm. 311A
Philadelphia, PA 19104-6393

chegrad@seas.upenn.edu
http://www.seas.upenn.edu/cbe/

Penn Engineering

Chemical Engineering

PENN STATE'S Chemical Engineering graduate degree program is located on a diverse, Big-Ten university campus in a vibrant college community. When you join our program, you'll use state-of-the-art facilities such as the Materials Research Institute, the Huck Institutes of the Life Sciences, and one of the foremost nanofabrication facilities in the world. We provide fellowships and research assistantships, including tuition and fees.

Research at Penn State spans the spectrum of chemical engineering with focus areas in biomolecular engineering, alternative energy, and nanotechnology.

FACULTY

ANTONIOS ARMAOU
PH.D., UCLA—Process control and system dynamics

KYLE BISHOP
PH.D., NORTHWESTERN—Complex dissipative systems: flame plasmas, chemical reaction networks, reaction-diffusion systems

ALI BORHAN
PH.D., STANFORD—Fluid dynamics, transport phenomena, capillary and inferfacial phenomena

WAYNE CURTIS
PH.D., PURDUE—Plant cell tissue culture, secondary metabolism, bioreactor design

RONALD DANNER
PH.D., LEHIGH—Phase equilibria and diffusion in polymer-solvent and gas solid systems

KRISTEN FICHTHORN
PH.D., UNIVERSITY OF MICHIGAN
Atomistic simulation, statistical mechanics, surface science, materials

HENRY FOLEY
PH.D., PENN STATE—Nanomaterials, reaction and separation, catalysis

ENRIQUE GOMEZ
PH.D., BERKELEY—Organic photovoltaics, organic–inorganic interfaces, nanostructured polymers

ESTHER GOMEZ
PH.D., BERKELEY—Bioengineering, cell and tissue mechanics, biosensors

MICHAEL JANIK
PH.D., UNIVERSITY OF VIRGINIA
Fuel cells and electrochemical systems for renewable energy sources

SEONG KIM
PH.D., NORTHWESTERN—Surface science, polymers, thin films, nanotribology, nanomaterials

MANISH KUMAR
PH.D., UNIVERSITY OF ILLINOIS—Biomimetic membranes, membrane proteins, membrane technology, desalination

COSTAS MARANAS
PH.D., PRINCETON—Computational protein design; reconstruction, curation, and analysis of metabolic networks; microbial strain optimization; design of biological circuits and synthetic biology; signaling networks and multiscale modeling in cancer biology, network science, optimization theory, and algorithms

JANNA MARANAS
PH.D., PRINCETON—Nano-scale structure and mobility in soft materials, with applications in alternative energy, biology, and polymer physics

THEMIS MATSOUKAS
PH.D., UNIVERSITY OF MICHIGAN
Aerosol engineering, colloids, plasma processing

SCOTT MILNER
PH.D., HARVARD—Glass transitions in dense fluids and polymer films, flow behavior of entangled polymers, polymer crystallization

JOSEPH PEREZ
PH.D., PENN STATE—Tribology, lubrication, biodiesel

ROBERT RIOUX
PH.D., BERKELEY—Heterogeneous catalysis, nanostructure synthesis, renewable energy, atomic-level characterization, single molecule chemistry

HOWARD SALIS
PH.D., UNIVERSITY OF MINNESOTA—Synthetic biology, metabolic engineering, design of genetic systems

DARRELL VELEGOL
PH.D., CARNEGIE MELLON
Colloidal and nanocolloidal devices and systems

JAMES VRENTAS
PH.D., UNIVERSITY OF DELAWARE
Transport phenomena, applied mathematics, fluid mechanics, diffusion, polymer science

THOMAS WOOD
PH.D., NC STATE—Biofilms, metabolic engineering, synthetic biology, green chemistry

ANDREW ZYDNEY
PH.D., MIT—Development of membrane systems for bioprocessing applications, mass transfer characteristics of artificial organ systems

FOR MORE INFORMATION

Janna Maranas, Graduate Admissions Chair
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Department of Chemical Engineering
The Pennsylvania State University
University Park, PA 16802

814-863-6228 jmaranas@engr.psu.edu

PENNSTATE

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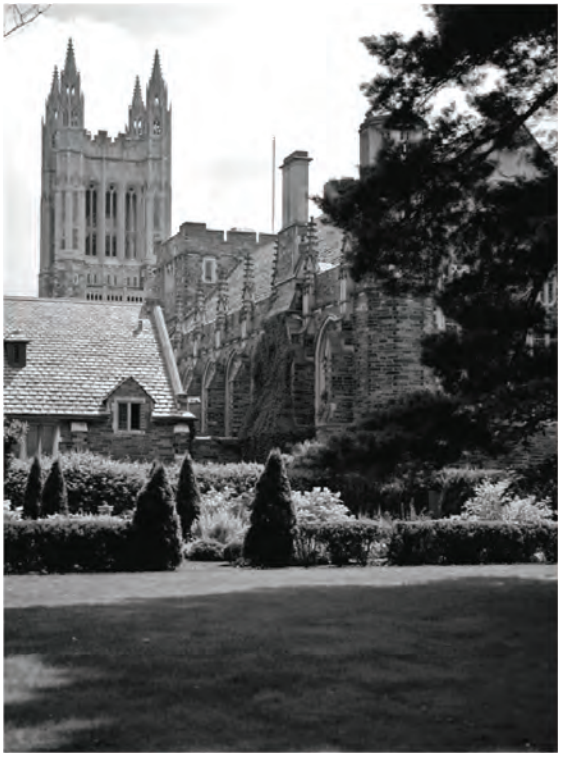
Princeton University

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



CBE Faculty

Ilhan A. Aksay
Jay B. Benziger
Clifford P. Brangwynne
Mark P. Brynildsen
Pablo G. Debenedetti
Christodoulos A. Floudas
Yannis G. Kevrekidis
Bruce E. Koel
Morton D. Kostin
A. James Link
Yueh-Lin (Lynn) Loo
Celeste M. Nelson
Athanassios Z. Panagiotopoulos
Rodney D. Priestley
Robert K. Prud'homme
Richard A. Register (Chair)
William B. Russel
Stanislav Y. Shvartsman
Sankaran Sundaresan

Affiliate Faculty

Emily A. Carter (Mechanical and Aerospace Engineering)
George W. Scherer (Civil and Environmental Engineering)
Howard A. Stone (Mechanical and Aerospace Engineering)

❑Applied and Computational Mathematics
Computational Chemistry and Materials
Systems Modeling and Optimization

❑Biotechnology
Bacterial Persistence
Biomaterials
Cell Mechanics
Computational Biology
Protein and Enzyme Engineering
Tissue Development

❑Environmental and Energy Science and Technology
Art and Monument Conservation
Fuel Cell Engineering
Organic Photovoltaics

❑Fluid Mechanics and Transport Phenomena
Biological Transport
Granular and Multiphase Flow
Microfluidics
Polymer and Suspension Rheology

❑Materials: Synthesis, Processing, Structure, Properties
Adhesion and Interfacial Phenomena
Ceramics and Glasses
Colloidal Dispersions
Nanoscience and Nanotechnology
Organic and Polymer Electronics
Polymer, Chemistry, Physics, and Engineering

❑Process Engineering and Science
Chemical Reactor Design, Stability, and Dynamics
Heterogeneous Catalysis and Surface Science
Process Control and Operations
Process Synthesis and Design

❑Thermodynamics and Statistical Mechanics
Complex Fluids
Glasses
Kinetic and Nucleation Theory
Liquid State Theory
Molecular Simulation

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

or call:
609-258-4619

or email:
cbegrad@princeton.edu

Please visit our website: www.princeton.edu/cbe

PURDUE
UNIVERSITY

CHEMICAL ENGINEERING

THE THINGS WE MAKE MOVE THE WORLD FORWARD

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Rakesh Agrawal accepting the National Medal of Technology and Innovation from President Obama

RESEARCH

- Catalysis and Reaction Engineering
- Chemical Synthesis
- Fluid Mechanics and Interfacial Phenomena
- Mass Transfer and Separations
- Medical and Bioengineering
- Molecular and Nanoscale Modeling
- Nanotechnology
- Phamaceutical Engineering
- Polymers and Materials
- Product and Process Systems Engineering
- Solar Energy
- Hydrogen-Based Fuels
- Thermoelectrics
- Biofuels

FACULTY

- Rakesh Agrawal
- Osman A. Basaran
- Stephen P. Beaudoin
- Bryan W. Boudouris
- James M. Caruthers
- David S. Corti
- W. Nicholas Delgass
- Elias I. Franses
- Jeffrey P. Greeley (SPRING '13)
- Rajamani Gounder (FALL '13)
- Robert E. Hannemann
- Michael T. Harris
- R. Neal Houze
- Sangtae Kim
- James D. Litster
- Julie C. Liu
- John A. Morgan
- Zoltan K. Nagy
- Joseph F. Pekny
- R. Byron Pipes
- Doraiswami Ramkrishna
- Gintaras V. Reklaitis
- Fabio H. Ribeiro
- Kendall T. Thomson
- Arvind Varma (Head)
- Nien-Hwa L. Wang
- Phillip C. Wankat
- You-Yeon Won
- Yue Wu
- Chongli Yuan

FOR MORE INFORMATION...

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Forney Hall of Chemical Engineering
Purdue University
480 Stadium Mall Drive
West Lafayette, IN 47907

PHONE: 765 494 4057
E-MAIL: chegrad@ecn.purdue.edu

http://engineering.purdue.edu/ChE



Chemical and Biological Engineering at

Rensselaer Polytechnic Institute

The Howard P. Isermann Department of Chemical and Biological Engineering at Rensselaer has long been recognized for its excellence in teaching and research. Its graduate programs lead to research-based M.S. and PhD. 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.S. 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://cbe.rpi.edu

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 and Catskill 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 Admissions
Rensselaer Polytechnic lnstitute
Troy, NY 12180-3590
Telephone: 518-276-6216
e-mail: admissions@rpi.edu
http://admissions.rpi.edu/graduate/

Faculty and Research Interests

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

B. Wayne Bequette, bequette@rpi.edu
Process control; fuel cell systems; biomedical systems

Vidhya Chakrapani,
Semiconductor electrochemistry, energy, advanced materials, optical and electronic properties of wide bandgays materials.

Cynthia H. Collins, ccollins@rpi.edu
Systems biology; protein engineering; intercellular communication systems; synthetic microbial ecosystems

Marc-Olivier Coppens, coppens@rpi.edu
Nature-inspired chemical engineering; mathematical & computational modeling; statistical mechanics; nanoporous materials synthesis; reaction engineering

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

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

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

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

Pankaj Karande, karanp@rpi.edu
Drug delivery; combinatorial chemistry; molecular modeling; high throughput screening

Mattheos Koffas, koffam@rpi.edu
Metabolic engineering, natural products, drug discovery and biofuels

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

Peter M. Tessier, tessier@rpi.edu
Protein-protein interactions, protein self-assembly and aggregation

Patrick T. Underhill, underhill@rpi.edu
Transport phenomena, multi-scale model development and applications to colloidal, polymer, and biological systems

Emeritus Faculty

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

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

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

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

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

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

RICE

FACULTY

Sibani Lisa Biswal
(Stanford, 2004)

Walter Chapman
(Cornell, 1988)

Kenneth Cox
(Illinois, 1979)

Ramon Gonzalez
(Univ. of Chile, 2001)

George Hirasaki
(Rice, 1967)

Deepak Nagrath
(RPI, 2003)

Matteo Pasquali
(Minnesota, 2000)

Marc Robert
(Swiss Fed. Inst. Tech., 1980)

Laura Segatori
(UT Austin, 2005)

Rafael Verduzco
(Caltech, 2003)

Michael Wong
(MIT, 2000)

Kyriacos Zygourakis
(Minnesota, 1981)

JOINT APPOINTMENTS

Pulickel Ajayan
(Northwestern, 1989)

Cecilia Clementi
(Intl. Schl. Adv. Studies, 1998)

Vicki Colvin
(UC Berkeley, 1994)

Anatoly Kolomeisky
(Cornell, 1998)

Antonios Mikos
(Purdue, 1988)

Ka-Yiu San
(Caltech, 1984)

Edwin "Ned" Thomas
(Cornell, 1974)

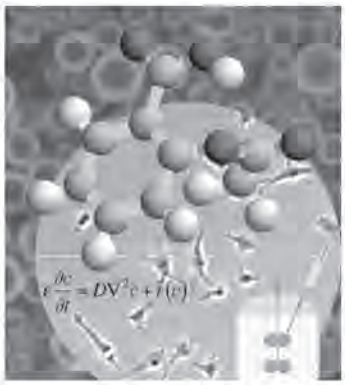
CHEMICAL AND BIOMOLECULAR ENGINEERING @ RICE

THE UNIVERSITY

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

THE DEPARTMENT

- Offers Ph.D., M.S., and M.Ch.E. degrees.
- Provides 12-month stipends and tuition waivers to full-time Ph.D. students.
- Currently has 74 graduate students (72 Ph.D. and 2 M.Ch.E.).
- Emphasizes interdisciplinary studies and collaborations with researchers from Rice and other institutions, national labs, the Texas Medical Center, NASA's Johnson Space Center, and R&D centers of petrochemical companies.



FACULTY RESEARCH AREAS

Advanced Materials and Complex Fluids
Synthesis and characterization of nanostructured materials, catalysis, nano- and microfluidics, self-assembling systems, hybrid biomaterials, rheology of nanostructured liquids, polymers, carbon nanotubes, interfacial phenomena, emulsions, and colloids.

Biosystems Engineering
Metabolic engineering, systems biology, nutritional systems biology, protein engineering, cellular and tissue engineering, microbial fermentations, analysis and design of gene networks, cellular reprogramming, and cell population heterogeneity.

Energy and Sustainability
Transport and thermodynamic properties of fluids, biofuels, CO_2 sequestration, biochar, gas hydrates, enhanced oil recovery, reservoir characterization, and pollution control.

For more information and graduate program applications, write to:
Chair, Graduate Admissions Committee
Chemical and Biomolecular Engineering, MS-362
Rice University, P.O. Box 1892
Houston, TX 77251-1892

Or visit our web site at http://www.rice.edu/chbe

Chemical Engineering at The University of Rochester

The Chemical Engineering Department at the University of Rochester offers M.S. and Ph.D. programs designed to both challenge and support our students' learning. Our graduate programs are among the highest ranked in the nation according to a recent NRC survey*. We provide leading edge research opportunities that cut across the boundaries of chemistry, physics, biology and chemical engineering disciplines with emphasis in energy, materials and biotechnology research. For qualified students, we offer competitive teaching and research assistantships and tuition scholarships.

* 2010 National Research Council Report www.nap.edu/rdp/

Graduate Studies & Research Programs

Advanced Materials

- Liquid Crystals
- Colloids & Surfactants
- Functional Polymers
- Inorganic/Organic Hybrids

Nanotechnology

- Thin Film Devices
- Photonics & Optoelectronics
- Nanofabrication
- Display Technologies

Clean Energy

- Fuel Cells & Batteries
- Solar Cells
- Biofuels
- Green Engineering

Biotechnology

- Biomass Conversion
- Stem Cell Engineering
- Drug Delivery
- Biosensing

Faculty

M. ANTHAMATTEN
PhD MIT, 2001
macromolecular self-assembly, shape memory polymers, vapor deposition, fuel cells

D. BENOITT
PhD Colorado, 2006
rational design, synthesis, characterization, and employment of materials to treat diseases or control cell behavior

S. H. CHEN
PhD Minnesota, 1981
polymer science, organic materials for photonics and electronics, liquid crystal and electroluminescent displays

E. H. CHIMOWITZ
PhD Connecticut, 1982
supercritical fluid adsorption, molecular simulation of transport in disordered media, statistical mechanics

D. R. HARDING
PhD Cambridge, 1986
chemical vapor deposition, mechanical and transport properties, advanced aerospace materials

S. D. JACOBS
PhD Rochester, 1975
optics, photonics, and optoelectronics, liquid crystals, magnetorheology

J. JORNE
PhD UC Berkeley, 1972
electrochemical engineering, fuel cells, microelectronics processing, electrodeposition

H. MUKAIBO
PhD Waseda (Japan), 2006
materials science, bio/nanoscience, bioanalytical chemistry, electrochemistry, energy storage

L. J. ROTHBERG
PhD Harvard, 1984
organic device science, light-emitting diodes, display technology, biological sensors

C. W. TANG
PhD Cornell, 1975
organic electronic devices, solar cells, flat-panel display technology

A. SHESTOPALOV
PhD Duke, 2009
Development of new unconventional fabrication and patterning techniques and their use in preparation of functional micro– and nanostructured devices

Y. SHAPIR
PhD Tel Aviv (Israel), 1981
critical phenomena, transport in disordered media, scaling behavior of growing surfaces

J. H. DAVID WU
PhD MIT, 1987
bone marrow tissue engineering, stem cell and lymphocyte cultures, enzymology of biomass energy process, bio-ethanol and bio-hydrogen

M. Z. YATES
PhD Texas, 1999
colloids and interfaces, supercritical fluids, microemulsions, molecular sieves, fuel cells

Chemical Engineering Graduate Studies

http://www.che.rochester.edu

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University of Rochester
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Rochester, NY 14627
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chegradinfo@che.rochester.edu

URChE

HAJIM SCHOOL OF ENGINEERING & APPLIED SCIENCES
UNIVERSITY of ROCHESTER

Master's of Science

HAJIM
SCHOOL OF ENGINEERING
& APPLIED SCIENCES
UNIVERSITY of ROCHESTER

Alternative Energy

The faculty at the University of Rochester have established strong research programs in advanced materials, biotechnology, and nanotechnology – the intellectual foundations for graduate education leading to Master's degrees. At the technological front, members of the Chemical Engineering faculty conduct research and teach courses highly relevant to alternative energy. Graduate-level courses and active research programs are underway in fuel cells, solar cells, and biofuels.

This program is designed for graduate students with a Bachelor's degree in engineering or science, who are interested in pursuing a technical career in alternative energy. Courses and research projects will focus on the fundamentals and applications of the generation, storage, and utilization of various forms of alternative energy as well as their impact on sustainability and energy conservation.

FACULTY and RESEARCH PROGRAMS

Fundamentals

M. ANTHAMATTEN
PhD MIT, 2001

S. H. CHEN
PhD Minnesota, 1981

E. H. CHIMOWITZ
PhD Connecticut, 1982

D. FOSTER
PhD Rochester, 1999

T. D. Krauss
PhD Cornell, 1998

Biofuels

J. H. DAVID WU
PhD MIT, 1987

Nuclear Energy

W-U. SCHRÖDER
PhD Darmstadt, 1971

http://www.che.rochester.edu/altenergy.htm

Fuel Cells and Batteries

M. ANTHAMATTEN
PhD MIT, 2001

H. MUKAIBO
PhD Waseda (Japan), 2006

J. JORNE
PhD UC Berkeley, 1972

J. LI
PhD Washington, 1953

M. Z. YATES
PhD Texas, 1999

Solar Cells

M. ANTHAMATTEN
PhD MIT, 2001

S. H. CHEN
PhD Minnesota, 1981

T. D. KRAUSS
PhD Cornell, 1998

C. W. TANG
PhD Cornell, 1975

Alternative Energy
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Master of Science
Chemical Engineering

Rowan University

Project Management Experience · Collaboration with Industry · Multidisciplinary Research · Thesis and Courses-Only Options Part-time or Full-time Study · Assistantships Available

The Chemical Engineering Department at Rowan University offers a multidisciplinary research and teaching environment designed to help students achieve their full potential. State-of the-art laboratories and classrooms, and an emphasis on project management and industrially-relevant research are the hallmarks of Rowan Chemical Engineering. The Department has access to Rowan's two medical schools and the South Jersey Technology Center. In addition, the University has achieved New Jersey state research university designation. Rowan Chemical Engineering offers students an excellent education with numerous opportunities in emerging technologies.

Located in southern New Jersey, Rowan University is nestled between rural and major metropolitan areas. Philadelphia, the Jersey shore, orchards, and farms are all only a short drive away, and cultural and recreational opportunities are plentiful in the area.

Faculty

Kevin Dahm · *Massachusetts Institute of Technology*
Stephanie Farrell · *New Jersey Institute of Technology*
Zenaida Gephardt · *University of Delaware*
Robert Hesketh · *University of Delaware*
Gautam Pillay · *Texas A&M University*
Mariano Savelski, Chair · *University of Oklahoma*
C. Stewart Slater · *Rutgers University*
Mary Staehle · *University of Delaware*
Jennifer Vernengo · *Drexel University*

Research Areas

Membrane Separations · Pharmaceutical and Food Processing Technology · Biochemical Engineering · Systems Biology · Biomaterials · Green Engineering · Controlled Release· Kinetic and Mechanistic Modeling of Complex Reaction Systems · Reaction Engineering · Novel Separation Processes · Process Design and Optimization · Particle Technology · Renewable Fuels · Lean Manufacturing · Sustainable Design - Experimental Design and Data Analysis

For additional information

Dr. Zenaida Otero Gephardt · Department of Chemical Engineering
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Phone: (856) 256-5310 • Fax: (856) 256-5242
E-mail: gephardtzo@rowan.edu • Web: http://www.rowan.edu/engineering/

Chemical Engineering

at Ryerson University

PhD
MASc
MEng

Ryerson University offers an excellent graduate education in the heart of the vibrant city of Toronto, Ontario, Canada. Ryerson offers more than 100 undergraduate and graduate programs.

The Department of Chemical Engineering offers a versatile and unique program leading to a **doctor of philosophy (PhD)** degree, a **master of applied science (MASc)** degree or a **master of engineering (MEng)** degree. The course-based MEng degree can be completed through either full- or part-time study, while the research-intensive thesis-based MASc and PhD degrees are offered through full-time study.

KEY RESEARCH AREAS

Water/Wastewater and Food Treatment Technologies

- Use of rotating biological contactors and three-phase fluidized beds in treatment of industrial and municipal effluents
- Photo-oxidation and ozone technology applied to treatment of water and wastewater
- Advanced chemical oxidation and biological processes
- Fluid rheology in food processing
- Fundamental studies of adsorption and absorption of pollutants on solids and liquids
- Bio-adsorption of heavy metals and other contaminants
- Membrane process application in wastewater treatment, membrane fouling
- Biofuel ethanol: all processing steps to convert lignocellulosics into green ethanol
- Recombinant cellulases in transgenic plants
- Anaerobic digestion of agricultural food wastes
- Catalytic ozonation of wastewater

Polymer and Process Engineering

- Polymer rheology and application to processing techniques
- Kinetics of polymerization
- Nonlinear optical polymers
- Kinetics of phase transition and phase separation in polymer solutions
- Computer simulation of phase separation in polymer systems
- Computer simulation of complex fluids/condensed soft matter
- Process control and optimization: chemical reactors and infra-red/convective dryers
- Liquid crystalline and rod polymers
- Chemical reaction engineering; supercritical fluids; phase equilibria
- Biopolymers and biomaterials
- Interfacial rheology and surface chemistry
- Emulsion stabilization with colloidal particles
- Process modelling and simulation; Artificial Neural Networks (ANN) design
- Microfluidics and nanotechnology: synthesis of advanced materials
- Mixing of fluids with complex rheology
- Flow visualization (tomography and ultrasonic velocimetry)
- Computational fluid mixing
- Non-Newtonian fluid dynamics
- Microporous and mesoporous materials: growth, syntheses, characterizations and surface chemistry
- Optimal control of chemical processes
- Mass transfer in polymer-solvent systems
- Oil/gas processing and production; SAGD, VAPEX, Hybrid and SA-SAGS processes
- Utilization of waste product; fly ash characterizations and use; biofuel and energy from agricultural waste and industrial/forest by-products

FACULTY

Manuel Alvarez-Cuenca (PhD, Western Ontario)
Philip Chan (PhD, McGill)
Chil-Hung Cheng (PhD, Texas A & M)
Yaser Dahman (PhD, Western Ontario)
Ramdhane Dhib (PhD, Sherbrooke)
Huu Doan (PhD, Toronto)
Dae Kun Hwang (PhD, McGill)
Ali Lohi (PhD, Waterloo)
Mehrab Mehrvar (PhD, Waterloo)
Farhad Ein-Mozaffari (PhD, British Columbia)
Ginette Turcotte (PhD, Western Ontario)
Simant Upreti (PhD, Calgary)
Jiangning Wu (PhD, Windsor)

FOR MORE INFORMATION

CHEMICAL ENGINEERING GRADUATE PROGRAM
Ryerson University
Phone: 416-979-5000, ext. 7790
Email: **chemgrad@ryerson.ca**
www.ryerson.ca/graduate/chemical

TO APPLY

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UNIVERSITÉ DE SHERBROOKE

Nicolas ABATZOGLOU
Department Chair, Pfizer Industrial Chair on PAT. Particulate systems, multiphase catalytic reactors, pharmaceutical engineering

Nadi BRAIDY
Material engineering, nanosciences and nanotechnologies, materials characterization

Nathalie FAUCHEUX
Canada Research Chair
Cell-biomaterial biohybrid system, cancer and biomaterials, bone repair and substitute

François GITZHOFER
Thermal plasma materials synthesis, plasma spraying, materials characterization, SOFC

Ryan GOSSELIN
Pharmaceutical engineering (PAT), industrial process control, spectral imagery

Michèle HEITZ
Air treatment, biofiltration, bioenergy, biodiesel, biovalorization of agro-food wastes

Michel HUNEAULT
Polymer alloys, melt state biopolymer processing, materials characterization

J. Peter JONES
Treatment of industrial wastewater, design of experiments, treatment of endocrine disruptors

Léonie ROULEAU
Biomedical engineering, mechanobiology, molecular imaging

Jean-Michel LAVOIE, *Cellulosic Ethanol Industrial Chair,*
Biofuels industrial organic synthesis

Bernard MARCOS
Chemical and biotechnological processes modeling, energy systems modeling

Pierre PROULX
Modeling and numerical simulation, optimization of reactors, transport phenomena

Joël SIROIS
Suspension and cell metabolism, optimization of biosystems, bioactive principles production

Gervais SOUCY
Aluminum and thermal plasma technology, carbon nanostructures, materials characterization

Patrick VERMETTE
Tissue engineering and biomaterials, colloids and surface chemistry, drug delivery systems

University of South Alabama

Chemical & Biomolecular Engineering

James H. Davis, *Professor (joint with Chemistry)*
Ph.D, Vanderbilt University
Ionic Liquids Synthesis

T. Grant Glover, *Assistant Professor*
Ph.D, Vanderbilt University
Multifunctional Nanoporous Materials

B. Keith Harrison, *Professor and Assoc. VP*
Ph.D, University of Missouri
Thermodynamics, Process Simulation

Silas J. Leavesley, Assistant *Professor*
Ph.D, Purdue University
Biomedical Devices, Hyperspectral Imaging

Srinivas Palanki, *Professor and Chair*
Ph.D, University of Michigan
Alternative Energy, Systems Engineering

Nicholas D. Sylvester, *Professor*
Ph.D, Carnegie Mellon University
Microcontinuum Fluid Mechanics

Christy W. West, Assistant *Professor*
Ph.D, Georgia Institute of Technology
Chemical Reaction Systems, Catalysis

Kevin N. West, Assistant *Professor*
Ph.D, Georgia Institute of Technology
Ionic Liquids, Molecular Thermodynamics

The department offers an M.S. in Chemical Engineering and a D.Sc in Systems Engineering. Graduate students can also opt for the Biomedical Engineering track in the Basic Medical Sciences Ph.D program offered by the College of Medicine. The relatively small size of the graduate program promotes close interaction between students and faculty members. Current research is sponsored by NSF, NIH, NASA and chemical companies. Qualified students are offered competitive research and teaching assistantships. In 2012, the department moved to Shelby Hall, the new $40 million Engineering and Computing Building.

The department is located near the white sand beaches of the central gulf coast of the United States. There are a large number of local chemical and manufacturing industries such as Chevron, Evonik, Mitsubishi, AkzoNobel, BASF, Thyssen-Krupp, and Olin that provide employment opportunities to our graduates.

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Phone: (251) 460-6160, Email: che@usouthal.edu, Web: www.usouthal.edu/engineering/chemical

University of Tennessee

THE FUTURE IS NOW

Recent advances in the life sciences and nanotechnology, as well as the looming energy crisis, have brought chemical engineering education to the threshold of significant changes. The Department of Chemical and Biomolecular Engineering (CBE) at the University of Tennessee has embraced these changes in order to meet global challenges in health care, the environment, renewable energy sources, national security and economic prosperity. Partnerships with other disciplines at UT, such as medical, life, and physical sciences, as well as the College of Business Administration and Oak Ridge National Laboratory (ORNL), help to create exceptional research opportunities for graduate students in CBE and place our students in a position to develop leadership roles in the vital technologies of the future.

Faculty and Research Interests

Steve Abel (Stanford) -- Statistical mechanics, immunological cell signaling, membrane biophysics, reacting systems

Eric Boder (Illinois) -- Protein engineering, immune engineering, molecular bioengineering and biotechnology

Barry Bruce (Berkeley) -- Molecular chaperones, protein transport, bioenergy production

Chris Cox (Penn State) -- Bioenergy production, systems biology and metabolic engineering, environmental biotechnology

Wei-Ren Chen (MIT) -- Neutron scattering, advanced materials

Robert Counce (Tennessee) -- Industrial separations, process design, green engineering

Mark Dadmun (UMass) -- Polymer engineering, advanced materials

Brian Davison (CalTech) -- Systems biology, bioenergy production

Mitch Doktycz (Illinois-Chicago) -- Synthetic biology, nanobiotechnology

Paul Dalhaimer (Penn) -- Cytoskeleton biophysics, drug delivery, statistical mechanics, biophysical engineering

Brian Edwards (Delaware) -- Nonequilibrium thermodynamics, complex fluids, fuel cells

Paul Frymier (Virginia) -- Environmental biotechnology, sustainable energy production

Douglas Hayes (Michigan) -- Biocatalysis, bioseparations, colloids

David Joy (Oxford) -- Environmental microscopy, nanophase materials

Michael Kilbey (Minnesota) -- Interface engineering, soft materials

Ramki Kalyanaraman (NC State) -- Thin films, functional nanomaterials, phase transformation, self-assembly & self-organization

Bamin Khomami (Illinois) -- Micro- and nanostructured materials, complex fluids, multiscale modeling

David Keffer (Minnesota) -- Molecular simulation, advanced materials, fuel cells

Siris Laursen (Michigan) -- Catalysis, mulstiscale modeling, energy

Stephen Paddison (Calgary) -- PEM fuel cells, statistical mechanics, multiscale modeling

Cong Trinh (Minnesota) -- Inverse metabolic engineering, synthetic biology, bioenergy production

Tse-Wei Wang (MIT) -- Process modeling/control, bioinformatics, data mining

Thomas Zawodzinski (SUNY-Buffalo) -- Fuel cells, batteries, electrochemistry, transport phenomena

The UTK campus is located in the heart of Knoxville in beautiful east Tennessee, minutes from the Great Smoky Mountains National Park and surrounded by six lakes. Opportunities for outdoor recreation abound and are complemented by the diverse array of cultural activites afforded by our presence in the third largest city in Tennessee.

Chemical and Biomolecular Engineering at UT-Knoxville offers M.S. and Ph.D. degrees with financial assistance including full tuition and competitive stipends.

Chemical & Biomolecular Engineering
419 Dougherty Engineering Building
Knoxville, TN 37996-2200
Phone: (865) 974-2421
Email: cheinfo@utk.edu

http://www.engr.utk.edu/cbe/

THE UNIVERSITY of TENNESSEE KNOXVILLE

Chemical Engineering at Tennessee Tech University

Faculty

Pedro E. Arce, *Professor and Chair*
PhD, Purdue University, 1990.
Electrokinetics, Nano-Composite Soft Material for Electrophoresis (Environmental Proteomics, Clinical Diagnostics); Drug Delivery; Advanced Oxidation; Engineering Education.

Joseph J. Biernacki, *Professor*
DRE, Cleveland State University, 1988.
Cementious Materials (Hydration Kinetics, Material Structure); Green Chemistry-based Biofuels; Multi-Scale Materials (Modeling and Properties); Engineering Education.

Andrew Callender*, *Assistant Professor of Chemistry*
PhD, University of Michigan, 2006.
Nanoparticles in sensor, ceramic, photonic and optic applications; Environmental impact of nanoparticles; analytical methods.

Dr. Ahmed Elsawy*, *Professor of Engineering Technology*
PhD (ME), Cairo University, Egypt, 1977
Recycling and Reuse of Industrial Solid Waste Materials, Engineering of High Voltage Arc Physics, Development of Material and Manufacturing Processes

Dennis George*, *Professor and Director of Water Resources Center*
PhD, Clemson University, 1976.
Environmental System Engineering; Advanced Oxidation; Fate and Transport of Contaminants.

Yung-Way Liu*, *Professor of Mathematics*
PhD, University of Delaware, 1987.
Integral Boundary Methods; Dispersion Models in Capillaries; Applied Mathematics.

Cynthia Rice-York, *Assistant Professor*
PhD, University of Illinois, Urbana-Champaign, 2000.
Fuel Cells; Electrocatalysis; Research Methods in Undergraduate Education.

J. Robert Sanders, *Assistant Professor*
PhD, Vanderbilt University, 2001.
Biomolecular Medicine; Micro-fluidics in Clinical Diagnostics; Drug Delivery and Gene Therapy; Engineering Education.

Holly Stretz, *Associate Professor*
PhD, University of Texas, Austin, 2005.
Nanocompiste Structures and Modeling; High Temperature Materials and Ablatives; Polymer Processing.

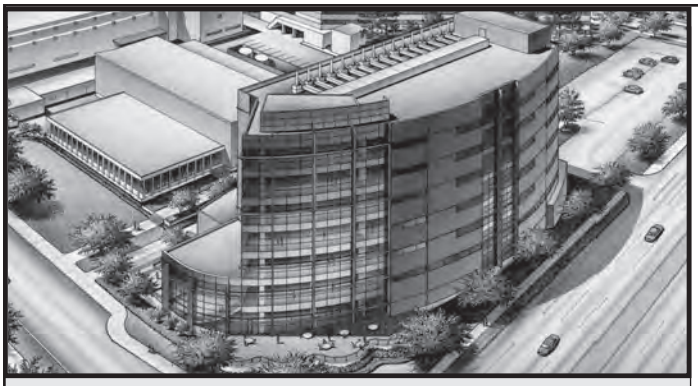
Dr. Kenneth Wiant*, *Professor of Finance, College of Business*
PhD, University of South Carolina, 1991, Innovation in Educational Technology, Corporate Finance, International Corporate Finance

(*) Collaborating faculty

Students with backgrounds in engineering (e.g., Chemical, Biomedical, Environmental, Mechanical, Engineering Physics, among others) or related disciplines (such as Applied Mathematics, Physics, and Physical Chemistry) have a unique opportunity to pursue their graduate education within the interdisciplinary Engineering PhD Program at TTU where Chemical Engineering is a strong partner. Graduates of the program have received prestigious NSF and NIH postdoctoral fellowships and leading research positions in premiere national and international companies. With high emphasis on doctoral level work, an award winning faculty working with a collegial collaborative approach (with colleagues from the College of Engineering, College of Business, and College of Art and Sciences) offers cutting-edge-research projects in *Advanced Materials* (Nanocomposite Hydrogels, Ceramics and Cement, Polymeric Membranes, etc.), *Electrical-based Systems* (Electrocatalysis, Electrokinetics, Electrophoresis, Fuel Cells, etc.), and *Biological-based Systems* (Molecular-based Biomedicine, Clinical Diagnostics, and Micro-Bioseparations). Opportunities in Molecular and Applied and Computational Mathematics are also available. Additionally, students interested in enhancing their expertise in Engineering Education will have exciting avenues in developing methodologies supporting the National Academy of Engineering's Vision for the Engineer of 2020 Model.

Faculty and students regularly present their research at premiere annual meetings including those supported by AIChE, ACS, ACerS, ASEE, AES, and others where students often receive awards for their outstanding contributions. Students and faculty work closely within and across research thrust areas on campus and at national labs and other leading organizations at the national and international level. Competitive graduate assistantships and fellowships are available.

FOR MORE INFORMATION, contact:
TTU Chemical Engineering Department ● P.O. Box 5013 ● Cookeville, TN 38505-0001 ● che@tntech.edu ● Phone (931) 372-3297
Fax (931) 372-6352 ● Also, visit us on the World Wide Web at: http://www.tntech.edu/che



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RESEARCH AREAS

Biomedical and Biomolecular,
Complex Fluids,
Environmental,
Materials,
Microelectronics,
Microfluidics,
Nanotechnology,
Process Safety,
Process Systems Engineering,
Reaction Engineering,
Thermodynamics

For More Information

Graduate Admissions Office
Artie McFerrin Department of Chemical Engineering
Dwight Look College of Engineering
Texas A&M University • College Station, Texas 77843-3122
Phone (979) 845-3361 • Web site: http://www.che.tamu.edu

M. Akbulut • Ph.D., University of California, Santa Barbara, 2007
Nanotechnology, surface and interface science, drug delivery

P. Balbuena • Ph.D., University of Texas, 1996, GPSA Professor
Molecular simulation and computational chemistry

D.B. Bukur • Ph.D., U. of Minnesota, 1974, Joe M. Nesbitt Professor
Reaction engineering, math methods

T. Cagin • Ph.D., Clemson University, 1988
Computational materials science and nanotechnology; functional materials for devices and sensors; surface and interface properties of materials

Z. Chen • Ph.D., University of Illinois, Urbana-Champaign, 2006
Protein engineering and biomolecular engineering

Z. Cheng • Ph.D., Princeton University, 1999
Nanotechnology

M. El-Halwagi • Ph.D., Univ. of California, 1990
McFerrin Professor
Environmental remediation & benign processing, process design, integration and control

G. Froment • Ph.D., University of Gent, Belgium, 1957
Kinetics, catalysis, and reaction engineering

C.J. Glover • Ph.D., Rice University, 1974, Interim Head
Materials chemistry, synthesis, and characterization, transport, and interfacial phenomena

K.R. Hall • Ph.D., Univ. of Oklahoma, 1967, Jack E. & Frances Brown Chair, Deputy Director TEES
Process safety, thermodynamics

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

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

A. Jayaraman • Ph.D., University of California, 1998, Ray Nesbitt Professor
Biomedical/biochemical

H.-K. Jeong • Ph.D., University of Minnesota, 2004
Nanomaterials

K. Kao • Ph.D., University of California, Los Angeles, 2005
Genomics, systems biology, and biotechnology

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

C. Laird • Ph.D., Carnegie Mellon University, 2006, William & Ruth Neely Faculty Fellow
Large-scale nonlinear optimization

J. Lutkenhaus • Ph.D., Massachusetts Institute of Technology, 2007
Organic thin films and nanostructures

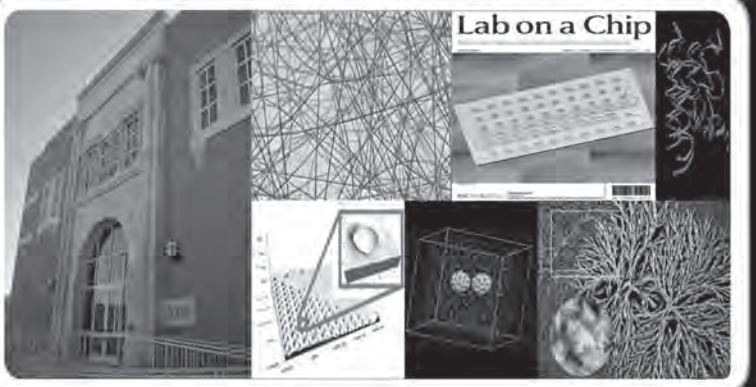
S. Mannan • Ph.D., University of Oklahoma, 1986, Mike O'Connor Chair I
Director, Mary Kay O'Connor Process Safety Center, Process safety

J. Seminario • Ph.D., Southern Illinois University, 1988, Lanatter & Herbert Fox Professor
Molecular simulation and computational chemistry

V. Ugaz • Ph.D., Northwestern University, 1999, K.R. Hall Professor
Microfabricated Bioseparation Systems

S. Vaddiraju • Ph.D., University of Louisville, 2006
Polymers

B. Wilhite • Ph.D., University of Notre Dame, 2003, Associate Head
Reaction engineering



Texas Tech University

Department of Chemical Engineering

www.depts.ttu.edu/che
Tel: (806) 742-3553
Fax: (806) 742-3552

Contact Information

Dr. Rajesh Khare
Associate Professor and
Graduate Advisor
rajesh.khare@ttu.edu

Texas Tech University
Chemical Engineering Department
P. O. Box: 43121

GRADUATE PROGRAM IN CHEMICAL ENGINEERING

Texas Tech's Chemical Engineering Graduate Program offers an outstanding balance between theory and experiment and between research and practice. The Faculty represents a broad range of backgrounds that bring industrial, national laboratory and academic experiences to the future graduate student. External funding supports a diverse research portfolio including Polymer Science, Rheology and Materials Science, Process Control and Optimization, Computational Fluid Dynamics, Molecular Modeling, Reaction Engineering, Bioengineering and Nano-Biotechnology.

Key Features: We have fifteen faculty members with significant industrial experience and national recognition within their fields of expertise. There is a Process Control and Optimization Consortium with participation from several key chemical industries. In 2011 the Department spent approximately $4 million in research expenditure to support graduate research projects. Based on an NSF published report, the Department ranks 46th.

More than 30,000 students attend classes in Lubbock on a 1,839 acre campus. Texas Tech University offers many cultural and entertainment programs, including nationally ranked football and basketball teams. Lubbock is a growing metropolitan city of more than 230,000 people and is located on top of the caprock on the South Plains of Texas. The city offers an upscale lifestyle that blends well with old fashioned Texas hospitality and Southwestern food and culture.

Admissions: Prospective students should provide official transcripts, official GRE General Test (verbal, quantitative written) scores, and should have a bachelor's degree in chemical engineering or equivalent. Prospective students should apply online by filling out the forms at the graduate school website.

www.depts.ttu.edu/gradschool/prospect.php

FACULTY

Dr. Harvinder Gill, PhD: Georgia Institute of Technology

Assistant Professor

Research:
Micro and nanosystems for drug and vaccine delivery; Biomaterials; Mucosal vaccination; Immune-Modulation.

Dr. Micah Green, PhD: Massachusetts Institute of Technology

Assistant Professor

Research:
Dispersion and processing of carbon nanomaterials; Multiscale modeling of the rheology and phase behavior of complex fluids.

Dr. Ron Hedden, PhD: Cornell University

Associate Professor

Research:
Synthesis and characterization of polymer networks and gels; Polymers for biofuels applications; Polymer processing.

Dr. Karlene Hoo, PhD: University of Notre Dame

Professor

Research:
Uncertainty and multivariate statistical analysis, Process design for dynamic operability; Model-based control; Thrombosis and the venous valve.

Dr. Nazmul Karim, PhD: University of Manchester, UK

Professor and Whitacre Department Chair

Research:
Control and optimization of chemical and bio-processes; Bio-fuels production using recombinant microorganisms including algae; Metabolic engineering; glyco-proteins in CHO cell culture; Diabetic and cardiovascular diseases; Vaccine production for flu viruses.

Dr. Rajesh Khare, PhD: University of Delaware

Associate Professor

Research:
Molecular dynamics and Monte Carlo simulations; Multiscale modeling methods; Properties of supercooled liquids and glassy polymers; Transport phenomena in interfacial systems; Enzymatic hydrolysis of cellulose.

Dr. Uzi Mann, PhD: University of Wisconsin

Professor

Research:
Particulate technology and processes; Chemical reaction engineering; Chemical process analysis modeling and design; Formulation and synthesis of hollow micro and submicro particles; Biodiesel.

Dr. Greg McKenna, PhD: University of Utah

P. W. Horn Professor

Research:
Small molecule interactions with glassy polymers; Torsion and normal force measurements; Nanorheology and nanomechanics; Melt and solution rheometry; Residual stresses in composite materials.

Dr. Ranghunathan Rengasamy, PhD: Purdue University

Professor

Research:
Fuel cell technology; Novel electrode and membrane fabrication for PEM fuel cells; Modeling, diagnostics and control of PEM and solid oxide fuel cells; Energy systems; Systems biology; Multi-Scale modeling and optimization; Controller performance assessment and process fault diagnosis.

Dr. Al Sacco, PhD: Massachusetts Institute of Technology

Dean of Engineering

Research:
Photocatalysis, Zeolite synthesis, Biosensors development, and synthesis and device integration of quantum wires arrays from natural materials.

Dr. Sindee Simon, PhD: Princeton University

P. W. Horn Professor

Research:
The physics of the glass transition and structural recovery; Melting and Tg at the nanoscale; Cure and properties of thermosetting resins; Measurement of the viscoelastic bulk modulus: Dilatometry and calorimetry.

Dr. Siva Vanapalli, PhD: University of Michigan

Assistant Professor

Research:
Drop-based microfluidics and screening applications; Devices for cancer diagnostics; Dynamics of flowing polymeric liquids and living cells; Nematode hydrodynamics and mechanosensing; Dynamics of polymicrobial biofilms.

Dr. Mark Vaughn, PhD: Texas A & M University

Associate Professor

Research:
Nitric oxide in the microcirculation; Membrane transport of small molecules; Transport and reaction in concentrated disperse system.

Dr. Brandon Weeks, PhD: Cambridge University, UK

Associate Professor

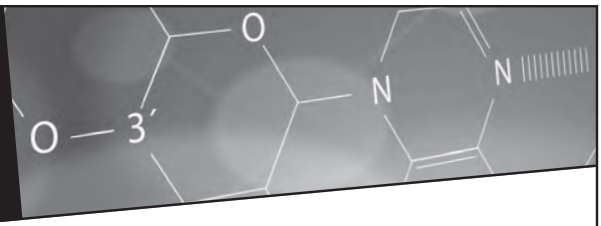
Research:
Nanoscale phenomena in energetic materials including crystal growth, Nanolithography, Thermodynamics and kinetics; Atomic Force Microscopy and thermal analysis; Scanning probe instrument design and Microscale sensors.

Dr. Ted Wiesner, PhD: Georgia Institute of Technology

Associate Professor

Research:
Conversion of Solar Energy to Fuels and Chemicals; Reactions and Transport Phenomena in Nanoparticulate Systems; Chemical Process Synthesis and Simulation; Computer-based training for engineers.

CHEMICAL & ENVIRONMENTAL **ENGINEERING**



FACULTY

ABDUL-MAJEED AZAD, PROFESSOR
Ph. D., University of Madras, India
Nanomaterials & Ceramics, Chemical Looping Combustion & CO2 Sequestration

MARIA R. COLEMAN, PROFESSOR
Ph. D., University of Texas at Austin
Membrane Separations, Bioseparations

JOHN P. DISMUKES, PROFESSOR
Ph. D., University of Illinois
Materials Processing, Managing Technological Innovation

ISABEL C. ESCOBAR, PROFESSOR
Ph. D., University of Central Flordia
Membrane Fouling and Membrane Modifications

SALEH JABARIN, PROFESSOR
Ph. D., University of Massachusetts
Polymer Physical Properties, Orientation & Crystallization

DONG-SHIK KIM, ASSOCIATE PROFESSOR
Ph. D., University of Michigan
Biomaterials, Metabolic Pathways, Biomass Energy

YAKOV LAPITSKY, ASSISTANT PROFESSOR
Ph.D., University of Delaware
Colloid & Polymer Science, Drug Delivery

STEVEN E. LEBLANC, PROFESSOR
Ph. D., University of Michigan
Process Control, Chemical Engineering Education

G. GLENN LIPSCOMB, PROFESSOR AND CHAIR
Ph. D., University of California at Berkeley
Membrane Separations, Alternative Energy, Education

BRUCE E. POLING, PROFESSOR EMERITUS
Ph. D., University of Illinois
Thermodynamics and Physical Properties

CONSTANCE A. SCHALL, PROFESSOR
Ph. D., Rutgers University
Biomass Conversion, Enzyme kinetics, Crystallization

SASIDHAR VARANASI, PROFESSOR
Ph. D., State University of New York, Buffalo
Bio- & Thermo-chemical Biomass Conversion, Colloid & Interfacial Phenomena

SRIDHAR VIAMAJALA, ASSISTANT PROFESSOR
Ph.D. Washington State
Biofuels from Algae and Lignocellulose, Bioprocessing

The Department of Chemical & Environmental Engineering at The University of Toledo offers graduate programs leading to M.S. and Ph.D. degrees. We are located in state of the art facilities in Nitschke Hall and our dynamic faculty offer a variety of research opportunities in contemporary areas of chemical engineering.

SEND INQUIRIES TO:
Graduate Studies Advisor
Chemical & Environmental Engineering
The University of Toledo
College of Engineering
2801 W. Bancroft Street
Toledo, Ohio 43606-3390

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cheedept@eng.utoledo.edu

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Tufts UNIVERSITY
Department of Chemical and Biological Engineering

Research Areas:

- **Batch Process Modeling, Optimization, Systems Engineering**
- **Biomaterials, Tissue Engineering**
- **Biomolecular Engineering, Cell Engineering**
- **Bionanotechnology, Biosensors, Smart Biopolymers**
- **Energy, Environmental Engineering, Soft Electronics, Green Technologies, Fuel Processing, Fuel Cells, Polymer Membranes**
- **Heterogeneous Catalysis, Nanocatalysis, Reaction Kinetics**
- **Mass Transfer with Chemical Reaction, Separation Process Modeling**
- **Metabolic Engineering, Systems Biology**

The department offers **M. Eng.**, **M. Sci.**, and **Ph.D.** degrees in **Chemical Engineering** and a **Ph.D.** degree in **Biotechnology Engineering**. The curriculum emphasizes both rigor and breadth through core and elective coursework in addition to thesis research. In partnership with the School of Engineering, the department also offers **M. Eng.** and **M. Sci.** degrees in **Bioengineering.** The departmental track in **Cell and Bioprocess Engineering** focuses on bioprocess design and optimization with an emphasis on molecular and cellular processes.

Department Faculty

Linda Abriola, Dean of School of Engineering Ph.D., Princeton University
Kyongbum Lee, Department Chair Ph.D., M.I.T.
Ayse Asatekin Ph.D., M.I.T.
Sujata Bhatia Ph.D. University of Pennsylvania
Gregory D. Botsaris, Emeritus Ph.D., M.I.T.
Maria Flytzani-Stephanopoulos Ph.D., University of Minnesota
Christos Georgakis Ph.D., University of Minnesota
David L. Kaplan Ph.D., Syracuse University
Steven Matson Ph.D., University of Pennsylvania
Jerry H. Meldon Ph.D., M.I.T.
Derek Mess Ph.D., M.I.T.
William Moomaw Ph.D., M.I.T.
Matthew Panzer Ph.D., University of Minnesota
Daniel R. Ryder Ph.D., Worcester Polytechnic Institute
Howard Saltsburg Ph.D., Boston University
Nak-Ho Sung Ph.D., M.I.T.
Ken Van Wormer, Emeritus Ph.D., M.I.T.
Hyunmin Yi Ph.D., University of Maryland

Visit our website!
http://engineering.tufts.edu/chbe

For more information:

Tufts University
Chemical and Biological Engineering
Science & Technology Center
4 Colby Street, Room 148
Medford, MA 02155
Phone: 617-627-3900; Fax: 617-627-3991
E-mail: chbe@tufts.edu
Application materials and information about the graduate studies at Tufts University are available on the web at http://gradstudy.tufts.edu/.

Tulane University

Department of Chemical and Biomolecular Engineering

Faculty and Research Areas

Henry S. Ashbaugh *• Classical Thermodynamics and Statistical Mechanics • Molecular Simulation • Solution Thermodynamics • Multi-Scale Modeling of Self-Assembly and Nanostructured Materials*

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

W T. Godbey *• Gene Delivery • Cellular Engineering • Molecular Aspects of Nonviral Transfection • Biomaterials*

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

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

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*

Noshir S. Pesika *• Nanomaterial Synthesis and Characterization • Surface Functionalization and Rheology • Bio-inspired Materials • Surface Science; Electrochemistry.*

Lawrence R. Pratt *• Statistical Mechanics and Thermodynamics • Theory of Liquids and Solutions • Molecular Biology • Electrochemical Capacitors and Electrical Energy Storage Systems • Statistical Methods in Computational Science, Especially Molecular Simulation*

Anne Skaja Robinson *• Molecular and cellular engineering for improving protein production, developing cellular biosensors, and for understanding and control of human disease*

For Additional Information, Please Contact

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

Tulane is located in a quiet, residential area of New Orleans, approximately six miles from the world-famous French Quarter. The 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 4,200 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 888,000, 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 energy industry, and offers materials, 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

S.A. Cremaschi • Engineering complex systems, optimization under uncertainty
D.W. Crunkleton • Alternative energy, transport phenomena
L.P. Ford • Kinetics of dry etching of metals, surface science
T. W. Johannes • Directed evolution, biocatalysis, biosynthesis, metabolic engineering
F.S. Manning • Industrial pollution control, surface processing of petroleum
C.L. Patton • Thermodynamics, applied mathematics
G.L. Price • Zeolites, heterogeneous catalysis
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 • 800 South Tucker Drive • Tulsa, Oklahoma 74104-3189
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E-mail: chegradadvisor@utulsa.edu • Graduate School application: 1-800-882-4723

Vanderbilt University

DEPARTMENT OF CHEMICAL AND BIOMOLECULAR ENGINEERING

Graduate Study Leading to the Ph.D. and M.S. 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. At Vanderbilt University we offer a broad range of research projects in chemical and biomolecular engineering, with wide ranging opportunities for interdisciplinary work and professional development. Focus areas include:

Adsorption and nanoporous materials
Alternative energy and biofuels
Biomaterials and tissue engineering
Computational molecular engineering and nanoscience
Metabolic engineering
Microelectronic and ultra-high temperature materials
Nanoparticles for drug and gene delivery
Surface modification and molecular self-assembly

Research assistantships offer a competitive stipend, full tuition waiver, and health insurance. Additionally School and University fellowship awards are available to outstanding applicants. To find out more visit:

http://www.che.vanderbilt.edu/

Vanderbilt, ranked in the top 20 nationally for its leadership in both research and teaching, is located on 330 park-like acres just one and one-half miles from downtown Nashville, one of the most vibrant and cosmopolitan mid-sized cities in the United States. Ten schools offer both an outstanding undergraduate and a full range of graduate and professional programs. With a prestigious faculty of more than 2,800 full-time and 300 part-time members, Vanderbilt attracts a diverse student body of approximately 6,500 undergraduates and 5,300 graduate and professional students from all 50 states and over 90 foreign countries.

Rizia Bardhan *(Ph.D., Rice University)*
Engineering hybrid nanoscale materials; plasmonic and nanophotonics; solar energy conversion; electrochemical energy storage; nanomedicine; nanobiosensing and biomimetics

Peter T. Cummings *(Ph.D., University of Melbourne)*
Computational nanoscience and nanoengineering; molecular modeling of fluid and amorphous systems; parallel computing; cell-based models of cancer tumor growth

Kenneth A. Debelak *(Ph.D., University of Kentucky)*
Catalytic reactions for renewable fuels; oscillations in bioreactors; development of plant-wide control algorithms; intelligent process control

Scott A. Guelcher *(Ph.D., Carnegie Mellon University)*
Biomaterials; bone tissue engineering; polymer synthesis and characterization; drug and gene delivery

G. Kane Jennings *(Ph.D., Massachusetts Institute of Technology)*
Molecular and surface engineering; polymer thin films; solar energy conversion; tribology; fuel cells

Paul E. Laibinis *(Ph.D., Harvard University)*
Self-assembly; surface engineering; interfaces; chemical sensor design; biosurfaces; nanotechnology

Matthew J. Lang *(Ph.D., University of Chicago)*
Molecular and cellular biophysics; functional measurement of biological motors and cell machinery; instrumentation: optical tweezers, microscopy and single molecule fluorescence

M. Douglas LeVan *(Ph.D., University of California, Berkeley)*
Novel adsorbent materials; adsorption equilibria; mass transfer in nanoporous materials; adsorption and membrane processes.

Clare McCabe *(Ph.D., University of Sheffield)*
Molecular modeling of complex fluids and materials; biological self-assembly; molecular rheology and tribology; molecular theory and phase equilibria

Peter N. Pintauro *(Ph.D., University of California, Los Angeles)* Electrochemical engineering; membrane development for hydrogen, methanol, and alkaline fuel cells; ion uptake and transport models for ion-exchange membranes; organic electrochemical synthesis

Bridget R. Rogers *(Ph.D., Arizona State University)*
Surfaces, interfaces, and films of microelectronic and ultra-high temperature materials; determination of process/property/performance relationships

Jamey D. Young *(Ph.D., Purdue University)* Metabolic engineering; systems biology; diabetes, obesity and metabolic disorders; tumor metabolism; autotrophic metabolism

For more information:
Director of Graduate Studies
Department of Chemical & Biomolecular Engineering
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Email: chegrad@vanderbilt.edu

University of Virginia

...fulfilling Thomas Jefferson's vision

Graduate Studies in Chemical Engineering

Graduate Admissions
Dept. of Chemical Engineering
102 Engineers' Way
P.O. Box 400741
University of Virginia
Charlottesville, VA 22904-4741
434-924-7778

E-mail:
cheadmis@virginia.edu

Visit our website:
www.che.virginia.edu

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

Giorgio Carta, *PhD, University of Delaware*
Bioseparations, protein chromatography, transport phenomena in adsorption and ion exchange

Robert J. Davis, *PhD, Stanford University*
Heterogeneous catalysis, reaction kinetics, conversion of renewable resources

Erik J. Fernandez, *PhD, University of California, Berkeley*
Purification and aggregation of protein therapeutics, molecular aspects of neurodegeneration

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

David L. Green, *PhD, University of Maryland, College Park*
Reaction engineering of nanoparticles, rheology of complex nanoparticle suspensions, soft materials

Gary M. Koenig, Jr., *PhD, University of Wisconsin-Madison*
Materials for energy storage, electrochemistry, colloid and interface science, nanomaterials, soft materials

Inchan Kwon, *PhD, California Institute of Technology*
Protein engineering and genetic engineering for biocatalysts design, therapeutics for Alzheimer's disease and Lou Gehrig's disease

Matthew Neurock, *PhD, University of Delaware*
Computational heterogeneous catalysis, molecular modeling, kinetics of complex reaction systems

John P. O'Connell, *PhD, University of California, Berkeley*
Molecular theory, thermodynamic modeling and process simulation for bioseparations and carbon capture

Michael R. Shirts, *PhD, Stanford University*
Molecular modeling, thermodynamics and statistical mechanics of complex fluids, pharmaceutical design, nanomolecular self-assembly

Chemical Engineering at Virginia Tech

Faculty . . .

Luke E.K. Achenie (Carnegie Mellon)
Modeling of chemical and biological systems

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

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

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

William A. Ducker (Australian Natl. Univ.)
Colloidal forces, surfactant self-assembly, atomic force microscopy

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

Erdogan Kiran (Princeton)
Supercritical fluids, polymer science, high pressure techniques

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

Chang Lu (Illinois)
Microfluidics for single cell analysis, gene delivery

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

Stephen M. Martin (Minnesota)
Soft materials, self-assembly, interfaces

Padma Rajagopalan (Brown)
Polymeric biomaterials, cell and tissue engineering

Abby R. Whittington (Illinois)
Tissue engineering, controlled release of proteins

VirginiaTech

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

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

Discovery. *It's the* Washington Way.
Come to the UW to make your mark in molecular design and nanoscale systems. Create the future.

The University of Washington ranks among the nation's and world's top research universities and is the #1 public university in federal funding. Chemical engineering graduate students have opportunities to do research at federally funded UW centers:

- Center for Nanotechnology (CNT)
- Genetically Engineered Materials Science & Engineering Center (GEMSEC)
- National ESCA and Surface Analysis Center for Biomedical Problems (NESAC/BIO)
- National Nanotechnology Infrastructure Network (NNIN)

Be part of a community of innovators.

- Engage in challenging research and explore opportunities for international study with a Pacific Rim focus.
- Participate in interdisciplinary PhD training programs in molecular engineering & science, technology commercialization, and cancer nanotechnology.
- Live in a dynamic region that is a center of high-tech industry, biotechnology, entrepreneurship, and advanced manufacturing.
- Join a distinguished group of alumni and faculty who have launched innovative companies, and are industry leaders and prominent academic scholars.

http://www.cheme.washington.edu • grad.admissions@cheme.washington.edu

Research Clusters

Molecular Energy Processes
- Chemical/electrochemical energy conversion and storage
- Biological energy conversion
- Photovoltaics

Living Systems and Biomolecular Processes
- Engineering of living systems
- Biomolecule design and production

Molecular Aspects of Materials and Interfaces
- Electrochemistry and electrochemical engineering
- Colloids and complex fluids
- Biomaterials and biointerfaces
- Nanoscience and nanotechnology

Molecular/Organic Electronics
- Design and synthesis of electronic polymers
- Polymer physics, processing, and devices

Core Faculty

Stuart Adler (UC Berkeley)
François Baneyx (Texas, Austin)
John C. Berg (UC Berkeley)
James M. Carothers (Harvard)
David G. Castner (UC Berkeley)
Hugh Hillhouse (Massachusetts)
Bradley R. Holt (Wisconsin)
Samson A. Jenekhe (Minnesota)
Shaoyi Jiang (Cornell)
Mary E. Lidstrom (Wisconsin)
René M. Overney (Basel, Switz.)
W. Jim Pfaendtner (Northwestern)
Danilo Pozzo (Carnegie Mellon)
Buddy D. Ratner (Brooklyn Poly.)
N. Lawrence Ricker (UC Berkeley)
Daniel T. Schwartz (UC Davis)
Hong Shen (Cornell)
Eric M. Stuve (Stanford)
Qiuming Yu (Cornell)

Graduate Admissions
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University of Washington
Seattle, Washington 98195-1750
Ph: 206-543-2250

UNIVERSITY OF WATERLOO

Graduate Study in Chemical Engineering

The Department of Chemical Engineering is one of the largest in Canada offering a wide range of graduate programs. Full-time and part-time M.A.Sc. programs are available. Full-time and part-time coursework M.Eng. programs are available. Ph.D. programs are available in all research areas.

Challenging Research in Novel Areas of Chemical Engineering:

Our professors offer research projects in:

- Nanotechnology and nano-materials
- Biomaterials with applications to drug delivery and tissue Engineering
- Biotechnology and Biochemical Engineering
- Catalysis
- Composite Materials
- Green Reaction Engineering/Fuel Cells
- Interfacial Phenomena
- Membrane Technology
- Polymer Engineering
- Process Control and Statistics
- Separation Processes

FINANCIAL SUPPORT

for graduate students is available in the form of:

- *Research Assistantships*
- *Teaching Assistantships*
- *Entrance Scholarships*

RESEARCH GROUPS AND PROFESSORS:

1. **Biochemical and Biomedical Engineering:**
   Bill Anderson, Marc Aucoin, Hector Budman, Pu Chen, Perry Chou, Frank Gu, Eric Jervis, Christine Moresoli, Raymond Legge, Michael Tam.
2. **Interfacial Phenomena, Colloids and Porous Media:**
   John Chatzis, Pu Chen, Zhongwei Chen, Michael Fowler, Dale Henneke, Mario Ioannidis, Rajinder Pal, Mark Pritzker, Boxin Zhao.
3. **Green Reaction Engineering:**
   Bill Anderson, Zhongwei Chen, Eric Croiset, Bill Epling, Michael Fowler, Flora Ng, Garry Rempel, Mark Pritzker.
4. **Nanotechnology:**
   Nasser Abukhdeir, Pu Chen, Zhongwei Chen, Frank Gu, Dale Henneke, Yuning Li, Leonardo Simon, Michael Tam, Ting Tsui, Aiping Yu, Boxin Zhao.
5. **Process Control, Statistics and Optimization:**
   Hector Budman, Peter Douglas, Tom Duever, Ali Elkamel, Alex Penlidis, Mark Pritzker, Luis Ricardez-Sandoval.
6. **Polymer Science and Engineering:**
   Tom Duever, Xianshe Feng, Mike Fowler, Frank Gu, Neil McManus, Alex Penlidis, Garry Rempel, Leonardo Simon, Joao Soares, Michael Tam, Costas Tzoganakis, Boxin Zhao.
7. **Separation Processes:**
   John Chatzis, Pu Chen, Zhongwei Chen, Xianshe Feng, Christine Moresoli, Flora Ng, Rajinder Pal, Mark Pritzker, Michael Tam.

ADMISSION REQUIREMENTS:

- Undergraduate Degree in Engineering or Science.
- FOR SCIENCE STUDENTS: No additional courses are required from applicants with an undergraduate degree in Science.

For further information, write or phone

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CHEMICAL ENGINEERING

MS and PhD Programs

FACULTY

Sushant Agarwal
West Virginia University

Brian J. Anderson
Massachusetts Institute of Technology

Debangsu Bhattacharyya
Clarkson University

Eugene V. Cilento
Dean
University of Cincinnati

Dady B. Dadyburjor
University of Delaware

Cerasela Z. Dinu
Max Planck Institute of Molecular Cell Biology and Genetics and Dresden University

Pradeep P. Fulay
Associate Dean
University of Arizona

Rakesh K. Gupta
Chair
University of Delaware

Robin S. Hissam
University of Delaware

David J. Klinke, II
Northwestern University

Edwin L. Kugler
Johns Hopkins University

Ruifeng Liang
Institute of Chemistry, CAS

Fernando V. Lima
Tufts University

Joseph A. Shaeiwitz
Carnegie Mellon University

Charter D. Stinespring
West Virginia University

Richard Turton
Oregon State University

Ray Y.K. Yang
Princeton University

Yong Yang
Ohio State University

John W. Zondlo
Carnegie Mellon University

RESEARCH AREAS INCLUDE:

Bioengineering, Systems Biology
Biomaterials, Tissue Engineering
Bionanotechnology, Biomimetics
Carbon Products from Coal
Catalysis and Reaction Engineering
Coal/Biomass Gasification
Coal/Biomass Liquefaction
Electronic Materials, Nanostructures
Energy Systems Modeling
Fluid-Particle Sciences
Fuel Cells
Molecular Dynamics and Modeling
Nanocomposites, Nanoparticles
Natural Gas Hydrates
Particle Coating/Agglomeration
Polymer Rheology
Separation Processes

FINANCIAL AID

Bayer Fellowships (includes internships)
Fellowships
Research Assistantships
Teaching Assistantships

West Virginia University.
BENJAMIN M. STATLER COLLEGE OF ENGINEERING AND MINERAL RESOURCES

For Application Information:
Professor Dady B. Dadyburjor
Graduate Admissions Committee
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Photo: David Nevala

WISCONSIN

Chemical & Biological Engineering

A top-ranked department for graduate study and research leading to the Ph.D. degree

- The University of Wisconsin-Madison Department of Chemical and Biological Engineering has a tradition of excellence dating to 1905.
- Our department has been a leader for the past century, ranking among the top programs in the U.S. throughout that period.
- A combination of course work and research creates a unique intellectually stimulating atmosphere.
- We offer cutting-edge research opportunities in biotechnology, nanotechnology, complex fluids, molecular and multiscale modeling, environmental engineering, atomic-scale design of surface reactivity, heterogeneous catalysis, and process systems engineering.
- Research in the department is highly interdisciplinary, capitalizing on programs of national prominence such as the NSF Materials Research Science and Engineering Center (MRSEC), the NSF Nanoscale Science and Engineering Center (NSEC), the Great Lakes Bioenergy Research Center (GLBRC), and the nation's largest NIH-funded biotechnology training program.
- The UW campus has uniformly strong programs in all areas of the biological, chemical, and physical sciences.
- Madison is a city consistently ranked as a top community in which to live, work, and play.

Photo: Jeff Miller, UW-Madison University Communications

Faculty research areas

Nicholas L. **ABBOTT**
Interfacial phenomena, colloid science, soft materials, nanotechnology, biomolecular interfaces

Juan J. **DE PABLO**
Molecular thermodynamics, statistical mechanics, polymer physics, nanotechnology, protein biophysics, protein and cell stabilization

James A. **DUMESIC**
Kinetics and catalysis, surface chemistry, energy from renewable resources

Michael D. **GRAHAM**
Fluid mechanics, complex fluids, microfluidics, applied and computational mathematics

George W. **HUBER**
Biomass conversion, heterogeneous catalysis and kinetics, high-throughput testing, catalyst characterization

Daniel J. **KLINGENBERG**
Colloid science, complex fluids, suspension rheology

Thomas F. **KUECH** (Chairman)
Semiconductor and advanced materials processing, solid-state, electronic, and nanostructured materials, interface science, solar energy

David M. **LYNN**
Polymer synthesis, biomaterials, functional materials, gene and drug delivery, controlled release, high-throughput synthesis/screening

Christos T. **MARAVELIAS**
Production planning and scheduling, supply chain management, optimization under uncertainty, process synthesis, systems biology

Manos **MAVRIKAKIS**
Thermodynamics, kinetics and catalysis, surface science, computational chemistry, electronic materials, fuel cells, hydrogen economy

Regina M. **MURPHY**
Biomedical engineering, protein-protein interactions, neurodegenerative disorders

Paul F. **NEALEY**
Polymers, directed assembly, nanofabrication, cell-substrate interactions

Sean P. **PALECEK**
Stem cell engineering, cell adhesion, cell signaling

Brian F. **PFLEGER**
Synthetic biology, biotechnology, protein engineering, sustainable chemical production

James B. **RAWLINGS**
Chemical reaction engineering, process modeling, dynamics, and control, statistical and computational methods in systems biology

Jennifer L. **REED**
Systems biology, metabolic model development and analysis, metabolic engineering

Thatcher W. **ROOT**
Green chemistry, renewable resources, catalysis, solid-state NMR

Eric V. **SHUSTA**
Drug delivery, protein engineering, biopharmaceutical design

Ross E. **SWANEY**
Process design, synthesis, modeling, and optimization

John **YIN**
Systems biology, virus-cell interactions, immunology, microfluidics

For more information, please contact:

Graduate Program Office
Dept. of Chemical & Biological Engineering
University of Wisconsin–Madison
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YALE Department of Chemical & Environmental Engineering

Eric Altman, Ph.D. Pennsylvania

Menachem Elimelech, Ph.D. Johns Hopkins

Gary Haller, Ph.D. Northwestern

Michael Loewenberg, Ph.D. Cal Tech

William Mitch, Ph.D. California-Berkeley

Chinedum Osuji, Ph.D. M.I.T.

Jordan Peccia, Ph.D. Colorado

Lisa Pfefferle, Ph.D. Pennsylvania

Daniel Rosner, Ph.D. Princeton

André Taylor, Ph.D. Michigan

Paul Van Tassel, Ph.D. Minnesota

Kyle Vanderlick, Ph.D. Minnesota

Corey Wilson, Ph.D. Rice

Julie Zimmerman, Ph.D. Michigan

Joint Appointments

- **Michelle Bell** (School of Forestry & Environmental Studies)
- **Gaboury Benoit** (School of Forestry & Environmental Studies)
- **Eric Dufresne** (Mechanical Engineering)
- **Tarek Fahmy** (Biomedical Engineering)
- **Thomas Graedel** (School of Forestry & Environmental Studies)
- **Edward Kaplan** (School of Management)
- **Mark Saltzman** (Biomedical Engineering)
- **Udo Schwarz** (Mechanical Engineering)
- **Kurt Zilm** (Chemistry)

Biomolecular Engineering
Interfacial Phenomena
Nanomaterials
Soft Matter
Energy
Sustainability
Water

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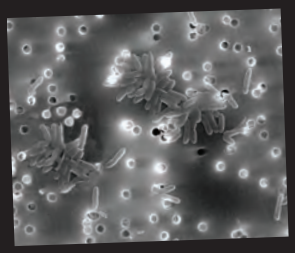
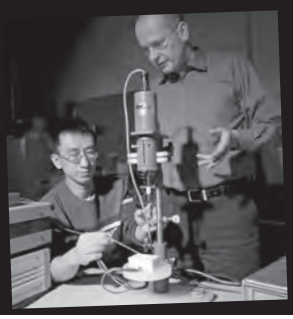
http://www.seas.yale.edu/departments-chemical.php





CLARKSON UNIVERSITY

Department of Chemical & Biomolecular Engineering
Graduate Study in Chemical Engineering (M.S. and Ph.D. Degrees)

The department research areas include biosensors and bioelectronics, plasma processing in condensed media; surface science, colloids, structured materials and self assembly; thin film deposition and crystallization, membrane processes, chemical mechanical polishing; photovoltaic devices, materials and fabrication; materials for fuel cells; air pollutant sampling and analysis, particulate transport and deposition; receptor modeling; soft matter, polymers and biomaterials; separation processes; and mass transfer and distillation.

Research collaboration is enhanced through the following University centers:

- Center for Advanced Materials Processing (CAMP)
- Center for Rehabilitation Engineering, Science and Technology (CREST)
- Institute for a Sustainable Environment (ISE)

For information and applications, apply to:
Graduate Committee
Department of Chemical & Biomolecular Engineering
Clarkson University, Potsdam, NY 13699-5705
315-268-6650 ◆ **www.clarkson.edu/chemeng**
chemeng@clarkson.edu

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FAMU—FSU College of Engineering
Florida State University and Florida A & M University

MS & PhD Degrees in
Chemical and Biomedical Engineering

Research Areas

- *Biomass and Energy Processing*
- *Plasma Reaction Engineering*
- *Cellular and Tissue Engineering*
- *NMR-MRI Imaging*
- *Nanoscale Science and Engineering*
- *Polymers and Complex Fluids*
- *Multiscale Theory, Modeling, and Simulation*
- *Fuels and Energy*
- *Organic and Bio- Materials*

Faculty

Rufina Alamo (University of Madrid)
Ravindran Chella (University of Massachusetts)
John R. Collier (Case Western Reserve University)
Wright C. Finney (Florida State University)
Samuel C. Grant (University of Illinois - Chicago)
Jingjiao Guan (Ohio State University)
Daniel Hallinan (Drexel University)
Egwu Eric Kalu (Texas A&M University)
Yan Li (Ohio State University)
Bruce R. Locke (North Carolina State University)
Teng Ma (Ohio State University)
Anant Paravastu (University of California, Berkeley)
Hyun-Ok Park (University of Florida)
Subramanian Ramakrishnan (University of Illinois – U/C)
Loren B. Schreiber (California Institute of Technology)
Theo M. Siegrist (ETH - Zurich)
John C. Telotte (University of Florida)

For more information contact:
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FAMU-FSU College of Engineering
2525 Pottsdamer Street, Tallahassee, FL 32310-6046
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University of Idaho
College of Engineering

Chemical & Materials Engineering

M.S. and Ph.D. programs

The department has a highly active research program covering a wide range of interests.
Faculty and Research Areas:

Wudneh Admassu—*Transport Phenomena, Gas Separations, Biochemical Engineering with Environmental Applications*

Eric Aston—*Surface Science, Thermodynamics, Microelectronics*

Indrajit Charit— *Nuclear and Reactor Materials, High Temperature Mechanical Behavior of Materials (Creep, Superplasticity), Nanostructured Materials, Advanced Processing Techniques*

Daniel Choi—*Nanoelectronics, Renewable Energy, Energy Storages (battery and capacitor), Nanomedicine, Semiconductor Processing, Nano/microfluidics, and Spintronics.*

David Drown—*Process Design, Computer Application Modeling, Process Economics and Optimization-Emphasis on Food Processing*

Dean Edwards—*Autonomous Vehicles, Battery research*

Batric Pesic—*High and Low Temperature Metal Separation Methods.*

Supathorn "Supy" Phongikaroon—*Nuclear Fuel Cycle, Spent Fuel Treatment* (Idaho Falls campus)

Krishnan Raja—*Nano-materials for Energy Conversion & Storage, Nuclear Materials, Aqueous and Non-aqueous Electrochemistry, and Environmental Degradation of Materials.*

Mark Roll—Polymers, Composites and Hybrid Materials

Aaron Thomas—*Transport Phenomena, Fluid Flow, Separations Magnetohydrodynamics*

Vivek Utgikar—*Environmental Fluid Dynamics, Chem/Bio Remediation, Kinetics*

For more information , contact:
University of Idaho
Graduate Advisor
Chemical & Materials Engineering
P.O. Box 441021
Moscow, ID 83844-1021
Email: gailb@uidaho.edu
Phone 208-885-7572
http://www.uidaho.edu/engr/cme/

The northern Idaho region offers a year round complement of outdoor activities including hiking, whitewater rafting, skiing and camping!

LAMAR UNIVERSITY

GRADUATE STUDY IN CHEMICAL ENGINEERING

Master of Engineering ■ Master of Engineering Science ■ Master of Environmental Engineering ■ Doctor of Engineering

■ Ph.D. of Chemical Engineering

FACULTY

- ✦ **T. J. BENSON** *(Ph.D., Mississippi State University)*
- ✦ **D. H. CHEN** *(Ph.D., Oklahoma State University)*
- ✦ **D. L. COCKE** *(Ph.D., Texas A&M University)*
- ✦ **J. L. GOSSAGE** *(Ph.D., Illinois Institute of Technology)*
- ✦ **Z.H. GUO** *(Ph.D., Louisiana State University)*
- ✦ **T. C. HO** *(Ph.D., Kansas State University)*
- ✦ **J. R. HOPPER** *(Ph.D., Louisiana State University)*
- ✦ **K. Y. LI** *(Ph.D., Mississippi State University)*
- ✦ **SIDNEY LIN** *(Ph.D., University of Houson)*
- ✦ **H. H. LOU** *(Ph.D., Wayne State University)*
- ✦ **P. RICHMOND** *(Ph.D., Texas A&M University)*
- ✦ **R. TADMOR** *(Ph.D., Weizmann Institute of Science)*
- ✦ **Q. XU** *(Ph.D., Tsinghua University)*
- ✦ **C. L. YAWS** *(Ph.D., University of Houston)*

RESEARCH AREAS

- ✦ Process Simulation, Control and Optimization
- ✦ Heterogeneous Catalysis, Reaction Engineering
- ✦ Air Quality Modeling, Fluidization Engineering
- ✦ Transport Properties, Mass Transfer, Gas-Liquid Reactions
- ✦ Computer-Aided Design, Henry's Law Constant
- ✦ Thermodynamic Properties, Water Solubility
- ✦ Air Pollution, Bioremediation, Waste Minimization
- ✦ Sustainability, Pollution Prevention
- ✦ Fuel Cell Applications
- ✦ Polymer Nanocomposite Fabrication and Applications
- ✦ Material Processing

For further information, contact

Graduate Admissions Coordinator • Department of Chemical Engineering • Lamar University • P.O. Box 10053 • Beaumont, TX 77710
Website: http://dept.lamar.edu/chemicalengineering • Phone: 409-880-8784

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M.S. and M.E.

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Ph.D., University of Tulsa, P.E.
Rheology, Oil and Gas Processing

H. A. DUARTE
Ph.D., Texas A&M University
Thermodynamics, Physical Property, Measurements, Process Simulation

P. L. MILLS
D.Sc., Washington University in St. Louis
Reaction Engineering and Process Science

R. G. MOGHANLOO
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C. D. Murphy
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FOR INFORMATION AND APPLICATION WRITE:

P. L. Mills
Texas A&M University—Kingsville
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Kingsville, Texas 78363
(361) 593-2002 • patrick.mills@tamuk.edu

VERITAS UNITAS CARITAS
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VILLANOVA UNIVERSITY
College of Engineering

The Villanova University M.S.Ch.E. and Ph.D. program is designed to meet the needs of both full-time and part-time graduate students. Funding is available to support full-time M.S.Ch.E. students.

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- ◐ Biotechnology/Biochemical Engineering
- ◐ Systems Biology
- ◐ Supercritical Fluid Applications
- ◐ Heterogeneous Catalysis
- ◐ Biomass Resources and Conversion Technologies
- ◐ Nanomaterials
- ◐ Sustainability/Alternative Energy
- ◐ Industrial Wastewater Treatment Processes

The part-time program is designed to address the needs of both new graduates and experienced working professionals in the suburban Philadelphia region, which is rich in pharmaceutical and chemical industry. Most courses are simultaneously offered in both classroom and distance learning modes.

For more information, contact:

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Professor William Kelly, Ph.D. Admissions Committee (william.j.kelly@villanova.edu)
Department of Chemical Engineering • Villanova University • 800 Lancaster Avenue • Villanova, PA 19085-1681
Phone 610-519-4946 • Fax 610-519-7354

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- *Imaging Sciences and Analysis*

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BROWN UNIVERSITY

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BROWN

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For further information, email:

Professor R. H. Hurt, Graduate Representative
Chemical and Biochemical Engineering Program
Brown University, School of Engineering, Providence RI 02912
Robert_Hurt@brown.edu
Please visit – http://www.engin.brown.edu

Cleveland State University

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For more information contact:
Graduate Program Director, Chemical and Biomedical Engineering Department, Cleveland State University, 2121 Euclid Avenue, Stilwell Hall 455, Cleveland, OH 44115;
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website: http://www.csuohio.edu/chemical_engineering/