Energy, Environmental & Chemical Engineering

Phone: 314-935-5545
Website: https://eece.wustl.edu/academics/undergraduate-programs/index.html

Faculty

Department Chair and Professor
Joshua Yuan (https://engineering.wustl.edu/faculty/Joshua-Yuan.html)
Professor, Energy, Environmental & Chemical Engineering
PhD, University of Tennessee
Design-based engineering to address challenges in energy, the environment and health

Endowed Professors
The Stifel & Quinette Jens Professor of Environmental Engineering Science
PhD, University of California, Davis
Combustion, advanced energy systems, clean coal, aerosols, nanoparticle synthesis, rechargeable battery materials, thermal science

Walter E. Browne Professor of Environmental Engineering
PhD, California Institute of Technology
Aquatic chemistry, environmental engineering, water quality, water treatment

Randall Martin (https://engineering.wustl.edu/faculty/Randall-Martin.html)
Raymond R. Tucker Distinguished Professor
PhD, Harvard University
Characterizing atmospheric composition to inform effective policies surrounding major environmental and public health challenges ranging from air quality to climate change

Vijay Ramani (https://engineering.wustl.edu/faculty/Vijay-Ramani.html)
Vice Provost for Graduate Education
Roma B. and Raymond H. Witcoff Distinguished University Professor
PhD, University of Connecticut
Electrochemical engineering, energy conversion

Vice Dean for Education
James McKelvey Professor of Engineering Education
DSc, Washington University
Air quality planning and management, aerosol science and engineering, green engineering

Professors
Zhen (Jason) He (https://engineering.wustl.edu/faculty/Zhen-Jason-He.html)
Director of Graduate Studies
PhD, Washington University
Environmental biotechnology, bioenergy production, biological wastewater treatment, resource recovery, bioelectrochemical systems, sustainable desalination technology, anaerobic digestion, forward osmosis, membrane bioreactors

PhD, Harvard University
Aquatic processes, molecular issues in chemical kinetics, environmental chemistry, surface/physical chemistry, environmental engineering, biogeochemistry, nanotechnology

Xinhua Liang
PhD, University of Colorado Boulder
Gas-phase synthesis, surface science and catalysis, nanostructured films and devices, energy and environmental applications

PhD, University of Washington
Metabolic modeling, fermentation engineering, algal bioprocesses

Director of the Center for Aerosol Science and Engineering (CASE)
PhD, California Institute of Technology
Aerosol properties and processes, nucleation and new particle formation, aerosols in the marine environment, effects of aerosols on cloud microphysical properties and macrophysical structure

Fuzhong Zhang (https://engineering.wustl.edu/faculty/Fuzhong-Zhang.html)
PhD, University of Toronto
Metabolic engineering, protein engineering, synthetic and chemical biology
**Associate Professors**

Rajan Chakrabarty ([https://engineering.wustl.edu/faculty/Rajan-Chakrabarty.html](https://engineering.wustl.edu/faculty/Rajan-Chakrabarty.html))  
PhD, University of Nevada, Reno  
Characterizing the radiative properties of carbonaceous aerosols in the atmosphere, researching gas-phase aggregation of aerosols in cluster-dense conditions

Marcus Foston ([https://engineering.wustl.edu/faculty/Marcus-Foston.html](https://engineering.wustl.edu/faculty/Marcus-Foston.html))  
Director of Diversity Initiatives  
PhD, Georgia Institute of Technology  
Utilization of biomass resources for fuel and chemical production, renewable synthetic polymers, development of advanced aerosol instruments

Tae Seok Moon ([https://engineering.wustl.edu/faculty/Tae-Seok-Moon.html](https://engineering.wustl.edu/faculty/Tae-Seok-Moon.html))  
PhD, Massachusetts Institute of Technology  
Metabolic engineering, synthetic biology

Elijah Thimsen ([https://engineering.wustl.edu/faculty/Elijah-Thimsen.html](https://engineering.wustl.edu/faculty/Elijah-Thimsen.html))  
PhD, Washington University  
Gas-phase synthesis of inorganic nanomaterials for energy applications, novel plasma synthesis approaches

Brent Williams ([https://engineering.wustl.edu/faculty/Brent-Williams.html](https://engineering.wustl.edu/faculty/Brent-Williams.html))  
PhD, University of California, Berkeley  
Aerosols, global climate issues, atmospheric sciences

**Assistant Professors**

Peng Bai ([https://engineering.wustl.edu/faculty/Peng-Bai.html](https://engineering.wustl.edu/faculty/Peng-Bai.html))  
PhD, Tsinghua University, China  
Develop next-generation batteries; probe the in situ electrochemical dynamics of miniature electrodes down to nanoscales; capture the heterogeneous and stochastic nature of advanced electrodes; identify the theoretical pathways and boundaries for the rational design of materials, electrodes, and batteries through physics-based mathematical modeling and simulation

Jenna Ditto  
PhD, Yale University  
Chemical composition of indoor and outdoor air, indoor air chemistry, health impacts of air pollution exposure

Fangqiong Ling ([https://engineering.wustl.edu/faculty/Fangqiong-Ling.html](https://engineering.wustl.edu/faculty/Fangqiong-Ling.html))  
PhD, University of Illinois at Urbana-Champaign  
Microbial ecosystem analysis and modelling, process modelling, machine learning, NextGen sequencing bioinformatics, environmental microbiology, bioreactor design

Kimberly M. Parker ([https://engineering.wustl.edu/faculty/Kimberly-Parker.html](https://engineering.wustl.edu/faculty/Kimberly-Parker.html))  
PhD, Stanford University  
Investigation of environmental organic chemistry in natural and engineered systems

**Research Assistant Professor**

Benjamin Kumfer ([https://engineering.wustl.edu/faculty/Benjamin-Kumfer.html](https://engineering.wustl.edu/faculty/Benjamin-Kumfer.html))  
DSc, Washington University  
Advanced coal technologies, biomass combustion, aerosol processes and health effects of combustion-generated particles

**Senior Lecturers**

Director of Undergraduate Studies  
PhD, Purdue University  
Chemical engineering education, biomaterials

Raymond Ehrhard ([https://engineering.wustl.edu/faculty/Ray-Ehrhard.html](https://engineering.wustl.edu/faculty/Ray-Ehrhard.html))  
BS, Missouri University of Science and Technology  
Water and wastewater treatment technologies, process energy management

**Lecturers**

Trent Silbaugh ([https://engineering.wustl.edu/faculty/Trent-Silbaugh.html](https://engineering.wustl.edu/faculty/Trent-Silbaugh.html))  
PhD, University of Washington  
Chemical engineering education, catalysis, carbon capture and conversion

Kristen Wyckoff  
PhD, University of Tennessee  
Environmental engineering education, stormwater runoff, environmental microbiology

**Affiliated Faculty**

Gary Moore  
Senior Lecturer for the Joint Engineering Program  
MS, Missouri University of Science and Technology  
Environmental management

**Adjunct Faculty**

Mangesh Bore  
PhD, University of New Mexico  
Process engineering

Keith Tomazi  
PhD, University of Missouri-Rolla  
Process development engineering

Grigoriy Yablonsky  
PhD, Boreskov Institute of Catalysis  
Chemical reaction engineering and heterogeneous catalysis
Senior Professor
Milorad P. Dudukovic
Laura and William Jens Emeritus Professor
PhD, Illinois Institute of Technology
Chemical reaction engineering, multiphase reactors, visualization of multiphase flows, tracer methods, environmentally benign processing