

CHEMICAL ENGINEERING (GRADUATE FIELD)

Program Website (<http://www.cheme.cornell.edu/>)

Field Description

Degree candidates are expected to pursue study and research that will give them a deeper comprehension of the basic and applied sciences and will develop initiative, originality, and creative ability. The thesis or dissertation may involve either research or special projects in such subjects as design, economics, or mathematical analysis. There is no language requirement for students majoring in chemical engineering.

Data and Statistics

- Research Master's Program Statistics (<https://gradschool.cornell.edu/about/program-metrics-assessments-and-outcomes/research-masters-program-statistics/?SelectGradField=25>)
- Doctoral Program Statistics (<https://gradschool.cornell.edu/about/program-metrics-assessments-and-outcomes/doctoral-program-statistics/?SelectGradField=25>)

Field Manual

- Manual (<https://www.cheme.cornell.edu/cbe/academics/graduate-programs/phd/>)

Subject and Degrees

Chemical Engineering

- Chemical Engineering (MS) (<https://catalog.cornell.edu/programs/chemical-engineering-ms/>)
- Chemical Engineering (PhD) (<https://catalog.cornell.edu/programs/chemical-engineering-phd/>)

Concentrations by Subject

Chemical Engineering

- advanced materials processing
- applied math and computational methods
- biochemical engineering
- chemical reaction engineering
- classical and statistical thermodynamics
- fluid dynamics, rheology, and biorheology
- heat and mass transfer
- kinetics and catalysis
- polymers
- surface science

Faculty

Nicholas Lawrence Abbott (<http://www.cheme.cornell.edu/faculty-directory/nicholas-l-abbott/>)

- **Campus:** Ithaca
- **Concentrations:** *Chemical Engineering:* advanced materials processing; fluid dynamics, rheology, and biorheology; polymers

- **Research Interests:** complex fluids and polymers, nanoscale electronics, photonics and materials processing

Hector Aguilar-Carreno (<http://www.vet.cornell.edu/research/faculty/hector-aguilar-carreno/>)

- **Campus:** Ithaca
- **Concentrations:** *Chemical Engineering:* biochemical engineering
- **Research Interests:** Entry, egress, and interactions of enveloped viruses with host cells, with emphasis on emerging zoonotic paramyxoviruses and coronaviruses, vaccines, and antiviral strategies

Christopher Alabi (<http://www.cheme.cornell.edu/faculty-directory/christopher-alabi/>)

- **Campus:** Ithaca
- **Concentrations:** *Chemical Engineering:* biochemical engineering; chemical reaction engineering

Nandini Ananth (<http://chemistry.cornell.edu/nandini-ananth/>)

- **Campus:** Ithaca
- **Concentrations:** *Chemical Engineering:* applied math and computational methods
- **Research Interests:** computational, chemical and bio-molecular engineering

Lynden A Archer (<http://www.cheme.cornell.edu/faculty-directory/lynden-archer/>)

- **Campus:** Ithaca
- **Concentrations:** *Chemical Engineering:* polymers
- **Research Interests:** polymer structure, properties, and dynamics in confined spaces and near surfaces

Ilana Lauren Brito (<http://www.bme.cornell.edu/faculty-directory/ilana-lauren-brito/>)

- **Campus:** Ithaca
- **Concentrations:** *Chemical Engineering:* biochemical engineering
- **Research Interests:** biochemical and chemical engineering

Susan Daniel (<http://www.cheme.cornell.edu/faculty-directory/susan-daniel/>)

- **Campus:** Ithaca
- **Concentrations:** *Chemical Engineering:* biochemical engineering; fluid dynamics, rheology, and biorheology; heat and mass transfer; surface science
- **Research Interests:** biochemical engineering; surface science; fluid dynamics; heat and mass transfer

Iwijn De Vlaminck (<http://www.bme.cornell.edu/faculty-directory/iwijn-de-vlaminck/>)

- **Campus:** Ithaca
- **Concentrations:** *Chemical Engineering:* biochemical engineering
- **Research Interests:** biosensing; genomics; biochemical engineering

Matthew P DeLisa (<http://www.engineering.cornell.edu/faculty-directory/matthew-delisa/>)

- **Campus:** Ithaca
- **Concentrations:** *Chemical Engineering:* biochemical engineering
- **Research Interests:** biochemical engineering; functional genomics; protein engineering; biomedical engineering

Julia Dshemuchadse (<http://www.mse.cornell.edu/faculty-directory/julia-dshemuchadse/>)

- **Campus:** Ithaca
- **Concentrations:** *Chemical Engineering:* advanced materials processing; fluid dynamics, rheology, and biorheology
- **Research Interests:** fluid dynamics, soft matter, materials science

Thomas Michael Duncan (<http://www.cheme.cornell.edu/faculty-directory/t-michael-duncan/>)

- **Campus:** Ithaca
- **Concentrations:** *Chemical Engineering:* kinetics and catalysis; polymers
- **Research Interests:** heterogeneous catalysis; advanced materials; solid-state NMR spectroscopy

James R Engstrom (<http://www.cheme.cornell.edu/faculty-directory/james-r-engstrom/>)

- **Campus:** Ithaca
- **Concentrations:** *Chemical Engineering:* surface science
- **Research Interests:** electric and advanced materials processing; gas-solid interactions; molecular beams; UHV surface science

Fernando Escobedo (<http://www.cheme.cornell.edu/faculty-directory/fernando-escobedo/>)

- **Campus:** Ithaca
- **Concentrations:** *Chemical Engineering:* classical and statistical thermodynamics
- **Research Interests:** thermodynamics and statistical mechanics; molecular simulation of polymers and biopolymers; study of structure-property relations in soft condensed matter

Claudia Fischbach-Teschl (<http://www.bme.cornell.edu/faculty-directory/claudia-fischbach/>)

- **Campus:** Ithaca
- **Concentrations:** *Chemical Engineering:* biochemical engineering
- **Research Interests:** chemical engineering

Greeshma Gadikota (<http://www.cee.cornell.edu/faculty-directory/greeshma-gadikota/>)

- **Campus:** Ithaca
- **Concentrations:** *Chemical Engineering:* fluid dynamics, rheology, and biorheology; surface science
- **Research Interests:** chemical engineering, sustainable energy

Emmanuel P Giannelis (<http://www.mse.cornell.edu/faculty-directory/emmanuel-p-giannelis/>)

- **Campus:** Ithaca
- **Concentrations:** *Chemical Engineering:* advanced materials processing; polymers

- **Research Interests:** polymer and metal-ceramic nanocomposites; ceramic thin films for electronic applications

Julie Melissa Goddard (<http://cals.cornell.edu/julie-m-goddard/>)

- **Campus:** Ithaca
- **Concentrations:** *Chemical Engineering:* advanced materials processing; biochemical engineering
- **Research Interests:** material science, biomaterials, environmental sustainability

Allison Godwin (<http://www.cheme.cornell.edu/faculty-directory/allison-godwin/>)

- **Campus:** Ithaca
- **Concentrations:** *Chemical Engineering:* applied math and computational methods
- **Research Interests:** quantitative research, data science, statistical methods, DBER

Jillian L Goldfarb (<http://cals.cornell.edu/jillian-goldfarb/>)

- **Campus:** Ithaca
- **Concentrations:** *Chemical Engineering:* chemical reaction engineering
- **Research Interests:** renewable energy, biofuels, catalyst, kinetics, thermodynamics, sustainable materials, water treatment, technoeconomic analysis, policy

Tobias Hanrath (<http://www.cheme.cornell.edu/faculty-directory/tobias-hanrath/>)

- **Campus:** Ithaca
- **Concentrations:** *Chemical Engineering:* advanced materials processing; polymers; surface science
- **Research Interests:** polymers; advanced materials processing; surface science

Sarah Hormozi (<http://hormozi.cbe.cornell.edu/>)

- **Campus:** Ithaca
- **Concentrations:** *Chemical Engineering:* fluid dynamics, rheology, and biorheology
- **Research Interests:** rheological and transport properties of suspensions and porous media; applied mathematics

Shaoyi Jiang (<http://www.bme.cornell.edu/faculty-directory/shaoyi-jiang/>)

- **Campus:** Ithaca
- **Concentrations:** *Chemical Engineering:* polymers
- **Research Interests:** Biomaterials, drug delivery, immunoengineering, cancer vaccines and regenerative medicine

Yong L Joo (<http://www.cheme.cornell.edu/faculty-directory/yong-l-joo/>)

- **Campus:** Ithaca
- **Concentrations:** *Chemical Engineering:* advanced materials processing; applied math and computational methods; fluid dynamics, rheology, and biorheology; polymers
- **Research Interests:** polymer fluid mechanics, rheology, applications to polymers processing, applied mathematics, and numerical analysis

Vibha Kalra (<http://www.cheme.cornell.edu/faculty-directory/vibha-kalra/>)

- **Campus:** Ithaca
- **Concentrations:** *Chemical Engineering:* advanced materials processing; kinetics and catalysis; polymers; surface science
- **Research Interests:** advanced materials processing, kinetics and catalysis, polymers, surface science

Brian J. Kirby (<http://www.engineering.cornell.edu/faculty-directory/brian-kirby/>)

- **Campus:** Ithaca
- **Concentrations:** *Chemical Engineering:* fluid dynamics, rheology, and biorheology; heat and mass transfer; surface science
- **Research Interests:** fluid dynamics, biorheology, rheology, surface science, heat and mass transfer

Donald L. Koch (<http://www.cheme.cornell.edu/faculty-directory/donald-l-koch/>)

- **Campus:** Ithaca
- **Concentrations:** *Chemical Engineering:* fluid dynamics, rheology, and biorheology
- **Research Interests:** rheological and transport properties of suspensions and porous media; applied mathematics

Sijin Li (<http://www.cheme.cornell.edu/cbe/>)

- **Campus:** Ithaca
- **Concentrations:** *Chemical Engineering:* biochemical engineering
- **Research Interests:** biomolecular engineering

Minglin Ma (<http://cals.cornell.edu/minglin-ma/>)

- **Campus:** Ithaca
- **Concentrations:** *Chemical Engineering:* advanced materials processing; chemical reaction engineering; kinetics and catalysis; polymers
- **Research Interests:** novel biomaterials and engineering approaches to pack live materials, ranging from single cancer stem cells to multi-cellular organisms, for diagnostics, disease modeling, and therapeutic applications. Current foci include cancer cell growth, liver disease modeling, and type 1 diabetes treatment.

Phillip J. Milner (<http://chemistry.cornell.edu/phillip-milner/>)

- **Campus:** Ithaca
- **Concentrations:** *Chemical Engineering:* advanced materials processing; chemical reaction engineering
- **Research Interests:** chemistry, chemical engineering, nanoscale electronics, photonics and materials processing

Christopher Kemper Ober (<http://www.mse.cornell.edu/faculty-directory/christopher-k-ober/>)

- **Campus:** Ithaca
- **Concentrations:** *Chemical Engineering:* polymers
- **Research Interests:** polymer synthesis; polymer materials science; polymers for microelectronics; environmentally and biologically friendly polymers; photolithography; synchrotron x-ray studies of polymers; self-organizing liquid crystalline and block copolymers

Matthew J. Paszek (<http://www.engineering.cornell.edu/faculty-directory/matthew-j-paszek/>)

- **Campus:** Ithaca
- **Concentrations:** *Chemical Engineering:* biochemical engineering
- **Research Interests:** chemical and biomolecular engineering; biomedical engineering

Perrine Pepiot (<http://www.engineering.cornell.edu/faculty-directory/perrine-pepiot/>)

- **Campus:** Ithaca
- **Concentrations:** *Chemical Engineering:* biochemical engineering; chemical reaction engineering; kinetics and catalysis
- **Research Interests:** computational fluid dynamics, turbulent reactive flows, combustion, chemistry reduction, biomass-to-biofuels conversion processes

David A. Putnam (<http://www.bme.cornell.edu/faculty-directory/david-putnam/>)

- **Campus:** Ithaca
- **Concentrations:** *Chemical Engineering:* biochemical engineering
- **Research Interests:** drug delivery; design and synthesis of functional biomaterials; combinatorial approaches to drug formulation/stabilization/delivery

Richard D. Robinson (<http://www.engineering.cornell.edu/faculty-directory/richard-douglas-robinson/>)

- **Campus:** Ithaca
- **Concentrations:** *Chemical Engineering:* advanced materials processing; surface science
- **Research Interests:**

Meredith Silberstein (<http://www.engineering.cornell.edu/faculty-directory/meredith-silberstein/>)

- **Campus:** Ithaca
- **Concentrations:** *Chemical Engineering:* polymers
- **Research Interests:** living materials, polymer mechanics, mechanochemistry, biomechanics

Alexandra Coso Strong (<http://www.cheme.cornell.edu/faculty-directory/alexandra-coso-strong/>)

- **Campus:** Ithaca
- **Concentrations:** *Chemical Engineering:* applied math and computational methods
- **Research Interests:** Engineering education, Complex Systems, Network Science and Computation

Abraham Duncan Stroock (<http://www.cheme.cornell.edu/faculty-directory/abraham-d-stroock/>)

- **Campus:** Ithaca
- **Concentrations:** *Chemical Engineering:* advanced materials processing; chemical reaction engineering; fluid dynamics, rheology, and biorheology; heat and mass transfer
- **Research Interests:** microfluidics; heat and mass transfer; physico-chemistry of colloids and interfaces; biomaterials; biomedical engineering

Jin Suntivich (<http://www.mse.cornell.edu/faculty-directory/jin-suntivich/>)

- **Campus:** Ithaca
- **Concentrations:** *Chemical Engineering:* kinetics and catalysis
- **Research Interests:** chemical engineering, sustainable energy, catalysis

Jefferson W. Tester (<http://www.cheme.cornell.edu/faculty-directory/jefferson-w-tester/>)

- **Campus:** Ithaca
- **Concentrations:** *Chemical Engineering:* chemical reaction engineering; classical and statistical thermodynamics; heat and mass transfer
- **Research Interests:** geothermal and biomass energy; advanced drilling technology; unconventional fossil fuel upgrading; carbon capture and sequestration; green chemistry in supercritical media; water purification

Zhiting Tian (<http://ztgroup.org/>)

- **Campus:** Ithaca
- **Concentrations:** *Chemical Engineering:* advanced materials processing; chemical reaction engineering
- **Research Interests:** chemistry, chemical engineering, Nanoscale electronics, photonics and materials processing

Jeffrey D. Varner (<http://www.cheme.cornell.edu/faculty-directory/jeffrey-d-varner/>)

- **Campus:** Ithaca
- **Concentrations:** *Chemical Engineering:* applied math and computational methods; biochemical engineering
- **Research Interests:** applied math and computational methods; computational biology; biomolecular engineering

Yadong Wang (<http://www.bme.cornell.edu/faculty-directory/yadong-wang/>)

- **Campus:** Ithaca
- **Concentrations:** *Chemical Engineering:* biochemical engineering; chemical reaction engineering; polymers
- **Research Interests:** tissue engineering and drug delivery, polymers, human health

Lars Frederick Westblade (<http://www.cheme.cornell.edu/cbe/>)

- **Campus:** Cornell Tech (NYC) - (Minor Member)
- **Concentrations:** *Chemical Engineering:* biochemical engineering; fluid dynamics, rheology, and biorheology
- **Research Interests:** microbiology, pathology

Ulrich Bernd Wiesner (<http://www.engineering.cornell.edu/faculty-directory/uli-b-wiesner/>)

- **Campus:** Ithaca
- **Concentrations:** *Chemical Engineering:* polymers
- **Research Interests:** polymer synthesis and self-assembly; block copolymers; sol-gel processes; organic-inorganic hybrid materials; silica nanoparticles; x-ray nanostructure analysis; bioimaging; fuel cells; ion conductivity; polymer gels

Rong Yang (<http://www.cheme.cornell.edu/faculty-directory/rong-yang/>)

- **Campus:** Ithaca
- **Concentrations:** Chemical Engineering: biochemical engineering
- **Research Interests:** biochemical engineering, nanoscale electronics, photonics and materials processing

Yao Yang (<http://www.yang.chem.cornell.edu/>)

- **Campus:** Ithaca
- **Concentrations:** *Chemical Engineering:* kinetics and catalysis
- **Research Interests:** Operando electrochemical liquid-cell scanning transmission electron microscopy (EC-STEM), Operando synchrotron X-ray spectroscopy and scattering, Single-crystal electrochemistry, Nanocatalysts for CO₂ electroreduction and green hydrogen production, Complex battery Interfaces

Andrew Yen (<http://www2.vet.cornell.edu/research-departments/faculty/andrew-yen-phd/>)

- **Campus:** Ithaca
- **Concentrations:** *Chemical Engineering:* applied math and computational methods; biochemical engineering; chemical reaction engineering
- **Research Interests:** biology; biomolecular engineering

Jingjie Yeo (<http://www.mae.cornell.edu/faculty-directory/jingjie-yeo/>)

- **Campus:** Ithaca
- **Concentrations:** *Chemical Engineering:* advanced materials processing
- **Research Interests:** multiscale computational simulations, molecular dynamics simulations, individual-based models, agent-based models, cellular models, artificial intelligence, machine-learning, polymers, biopolymers, protein, polysaccharides, DNA, living materials, bacteria, fungi

Fengqi You (<http://www.atkinson.cornell.edu/about/people/fellows/view.php?NetID=fy86>)

- **Campus:** Ithaca
- **Concentrations:** Chemical Engineering: chemical reaction engineering
- **Research Interests:** process,energy,environmental systems engineering

Qiuming Yu (<http://www.cheme.cornell.edu/faculty-directory/qiuming-yu/>)

- **Campus:** Ithaca
- **Concentrations:** *Chemical Engineering:* advanced materials processing; biochemical engineering
- **Research Interests:** (electronic) materials and bio (sensors)

Shuwen Yue (<http://www.cheme.cornell.edu/faculty-directory/shuwen-yue/>)

- **Campus:** Ithaca
- **Concentrations:** *Chemical Engineering:* applied math and computational methods; classical and statistical thermodynamics
- **Research Interests:** water, electrolytes, fluid phase behavior, machine learning, thermodynamics, materials design

Yu Zhong (<http://www.mse.cornell.edu/faculty-directory/yu-zhong/>)

- **Campus:** Ithaca
- **Concentrations:** *Chemical Engineering*: advanced materials processing; polymers; surface science
- **Research Interests:** membranes, organic electronic materials, 2D materials, nanofluids

Warren R. Zipfel (<http://www.bme.cornell.edu/faculty-directory/warren-r-zipfel/>)

- **Campus:** Ithaca
- **Concentrations:** *Chemical Engineering*: applied math and computational methods; biochemical engineering
- **Research Interests:** Biomedical Imaging and Instrumentation
Bioengineering Nanobio Applications Biomedical Engineering Image Analysis Biophysics