



Chemical & Biochemical Engineering AT RUTGERS

Do you want to develop drugs and new systems for their delivery—that could target everything from cancer to cystic fibrosis? Or are you interested in devising alternatives to fossil fuels? Perhaps you see yourself as a member of a company creative team that develops new food products or cosmetics. As a chemical engineer, you will impact any number of industries by applying principles of biology, chemistry, math, and physics to a wide range of fields.

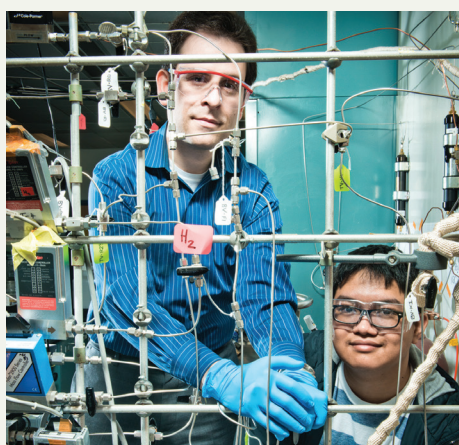
The Chemical and Biochemical Engineering program combines classroom and laboratory learning with hands-on practical and pre-professional training through numerous research and internship opportunities.

Our highly regarded faculty members are engaged in cutting-edge research in the areas of pharmaceutical science and technology and life sciences engineering. Special areas of focus include biotechnology, biomolecular engineering, and tissue engineering; the design, manufacture, and applications of nanostructured materials; and energy and sustainability.

We maintain close ties with industry leaders—such as DuPont, ExxonMobil, L'Oréal, and Merck—that support CBE programs with research and on-site training opportunities.

PROFESSIONAL OPPORTUNITIES

- Engineer alternative fuels
- Engineer new biotechnologies
- Manufacture chemicals
- Design and construct chemical plants
- Create new consumer goods
- Improve environmental health and safety
- Develop new foods and beverages
- Engineer new pharmaceuticals
- Engineer waste management systems



THE FUTURE IS NOW

Undergraduate Daryll Munoz was among the contributing researchers on two published papers, working alongside Prof. Fuat Celik on catalysts for producing hydrogen gas that can be used as an emissions-free source of energy for vehicles.

DEGREES OFFERED AND CURRICULAR OPTIONS

- BS Chemical Engineering
Option: Biochemical Engineering
- BS/BA Dual Degree
- BS/MS Five-year Dual Degree
- BS/ME Five-year Dual Degree
- BS/MBA Five-year Dual Degree
- MBS Chemical Engineering
- ME Pharmaceutical Engineering
- PhD Chemical Engineering



For more information, visit
cbe.rutgers.edu

"When I came to Rutgers, I had no idea what to major in. I was attracted to CBE because it's a major with a lot of options and opportunities in a lot of industries. It's a good fit for me."

Tiffany Yang



Established in 1864, Rutgers University's School of Engineering is a vibrant academic community whose richly diverse students and faculty members are committed to globally sustainable engineering. Its mission is built on a commitment to fostering the integration of education and research to achieve transformational innovation that is ethically responsible. With seven academic departments representing key engineering disciplines, the School of Engineering is recognized around the world as comprehensive and leading-edge, training the next generation of innovators across a broad spectrum of professions.

Chemical & Biochemical Engineering at Rutgers

PROGRAM HIGHLIGHTS

We prepare engineers able to take the lead in devising innovative and practical solutions to biochemical and chemical problems across a range of industries.

Courses in math, science, and engineering teach students to design and conduct experiments; analyze and interpret data; and identify and solve engineering problems. An emphasis on multidisciplinary teamwork, as well as on professional and ethical responsibility equips students for career success. A supplemental biochemical engineering option focusing on the biological systems of living organisms prepares students for food, pharmaceutical, biotechnology, and environmental industry careers—as well as medical or dental school.

HANDS-ON ACTIVITIES

Students gain invaluable, relevant work experience and make lasting professional network connections through full-time summer and part-time semester internships, as well as a six-month co-op program that lets them earn degree credits while working full-time. These programs often lead to post-graduate employment offers. Additionally, CBE students regularly engage in cutting-edge research under the guidance and mentorship of faculty advisors.

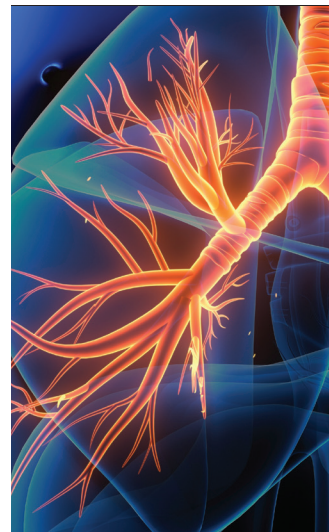
COURSES OFFERED

Biological Foundations of Chemical Engineering
Biochemical Engineering
Transport Phenomena in Chemical Engineering
Chemical Engineering Kinetics
Chemical Engineering Design
Chemical Engineering Thermodynamics
Process Simulation
Computational Methods in Chemical Engineering
Professional Skills Development

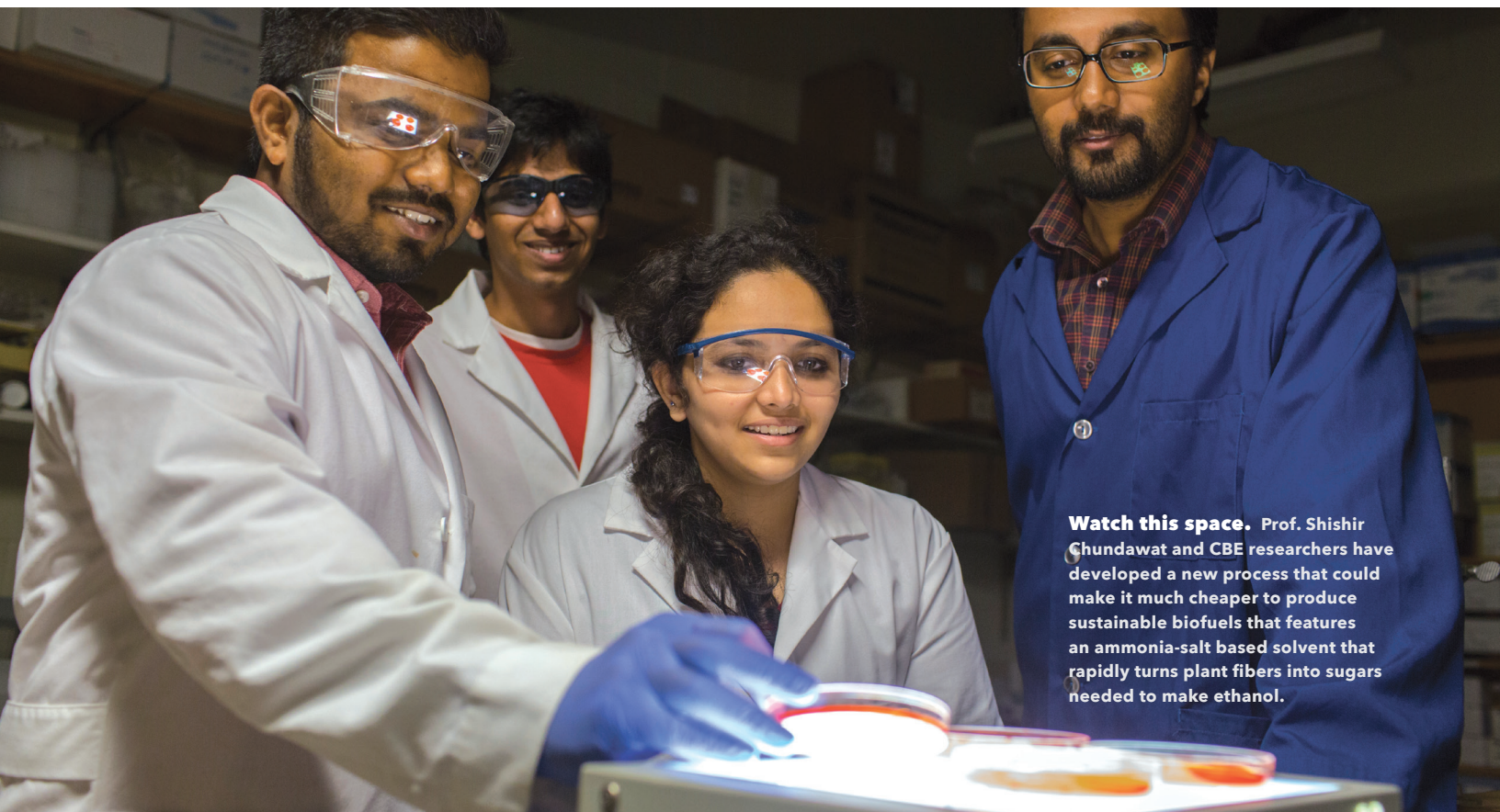
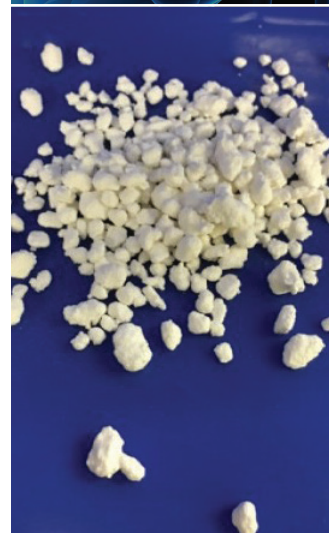
RESEARCH FACILITIES AND CENTERS

Catalyst Manufacturing Center
Center for Structured Organic Particulate Systems (C-SOPS)
Laboratory for Biomembranes and Drug Delivery Systems
Catalysis and Reaction Engineering Laboratories
Glycans, Glycoconjugates & Glycan Active Enzymes Engineering Lab
Nanomaterials Laboratory

Targeting the lungs of those suffering from cystic fibrosis, **Prof. Charles Roth** is working to develop a system to deliver **inhaled nanomedicines to infected areas** for better patient outcomes.



Prof. Rohit Ramachandran and his group are applying novel experimental design, machine learning, and mathematical modeling techniques to improve granulation processes commonly used to manufacture particulate-based pharmaceutical, food and beverage, and specialty chemical consumer goods.



Watch this space. Prof. Shishir Chundawat and CBE researchers have developed a new process that could make it much cheaper to produce sustainable biofuels that features an ammonia-salt based solvent that rapidly turns plant fibers into sugars needed to make ethanol.