Tufts University

# Chemical and Biological Engineering

Graduate students in the Chemical and Biological Engineering Department prepare for careers addressing the grand technological challenges of our time. Our graduate students actively engage in advancing new technologies for clean and sustainable energy, discovering novel therapeutics and diagnostics, and advancing manufacturing processes for improved resource utilization and waste reduction.

## Graduate Degree Programs

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.

## Interdisciplinary Graduate Program

In partnership with the School of Engineering, the department 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.

## Laboratories

The department houses state-of-the-art laboratories for **material synthesis** and **characterization**, **catalysis, molecular analysis** and **biological experimentation**. Laboratory capabilities are enhanced by on-campus core facilities and services for **micro/nanofabrication**, **biological imaging**, and **visualization**.

## Research Areas

- Batch Process Modeling, Optimization, Systems
- Biosensors, Smart Biopolymers, Nanobiofabrication
- Clean Water, Membranes, Polymer Science
- Clean Energy, Electrolyte Engineering, Soft Electronics, Green Technologies
- Directed Evolution, Genetic Code Expansion
- Heterogeneous Catalysis, Nanocatalysis, Reaction Kinetics, Fuel Processing
- Mass Transfer with Chemical Reaction, Separation Process Modeling
- Metabolic Engineering, Systems Biology
- Stem Cell Engineering and Bioprocessing
- Synthetic Biology, Protein Engineering

## Location

The department is located on the **Medford campus** of Tufts University, situated 8 miles from downtown Boston. The close proximity to Boston offers unique interaction opportunities with graduate programs of the Tufts School of Medicine, School of Dental Medicine, Sackler School of Biomedical Sciences and Friedman School of Nutrition Science and Policy, as well as other world-class research hospitals.

## Contact

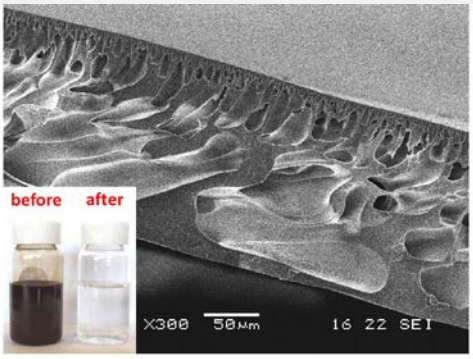
For inquiries, contact ChBE@tufts.edu or visit http://engineering.tufts.edu/chbe. Application materials and information about the graduate studies at Tufts University are available on the web at http://asegrad.tufts.edu.

**Connect with Tufts ChBE:**

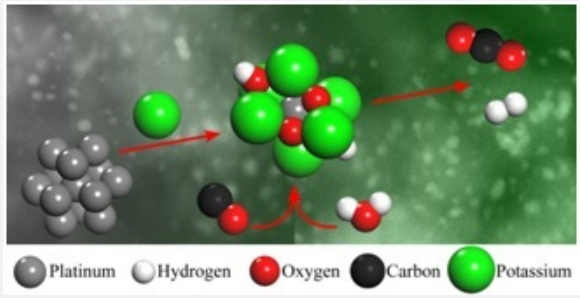
Science & Technology Center, 4 Colby Street | Medford, MA 02155 | http://engineering.tufts.edu/chbe| p: 617.627.3900 | e: ChBE@tufts.edu

# Research Snapshots

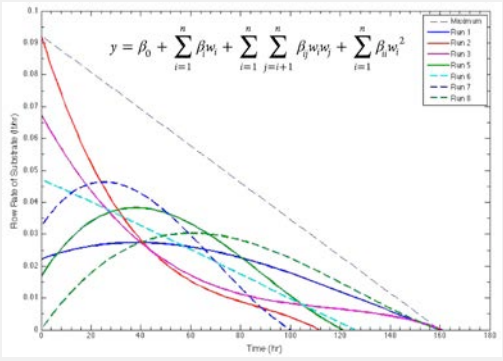
## MEMBRANES FOR CLEAN WATER



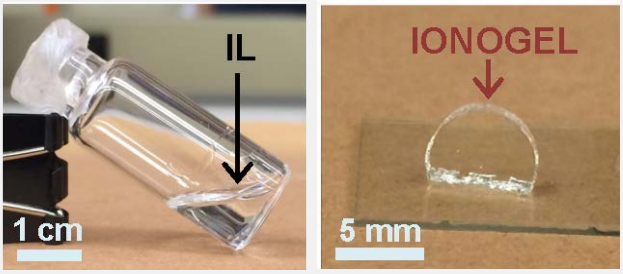

## NANOCATALYST DESIGN



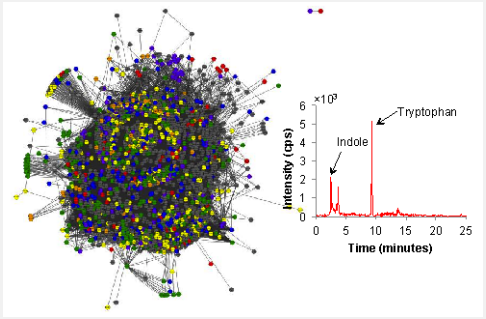

## DATA-DRIVEN OPTIMIZATION



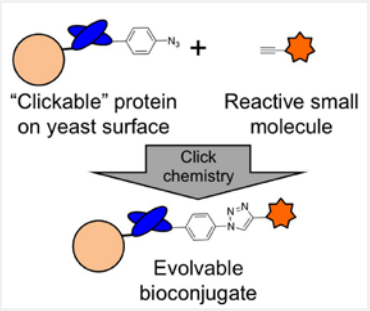

## IONIC LIQUID / GEL ELECTROLYTES




## MICROBIOTA METABOLOMICS

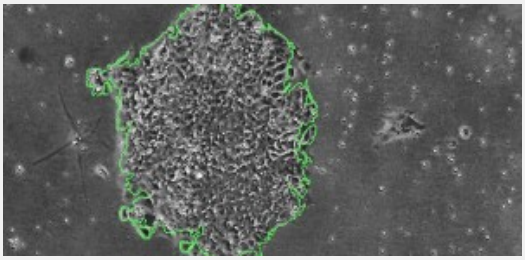



## THERAPEUTIC ENGINEERING

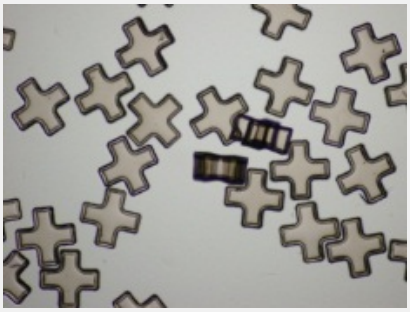



## PROTEIN ENGINEERING

## STEM CELL ENGINEERING



## METAL-VIRAL-POLYMERIC MICROPARTICLES



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