



# Department of Chemical Engineering

Newsletter - Spring 2024



## Welcome from the Chair

Dear Alumni, Colleagues and Friends,

A warm greeting from the Chemical Engineering Department here at the University of Massachusetts Lowell (UMass Lowell)! This is the first newsletter since I started my new role as the Department Chair since July 1, 2023. As we embarked on a new year - 2024, here are some recent news and update from the department. Dr. Caitlin Morris joined us in September, 2023 as an Assistant Teaching Professor. Our faculty have continued to excel in their research fields, in the emerging areas of clean energy, biomanufacturing, advanced materials, nanotechnology, and sustainability, to name a few.



Notably, Assistant Professor Dr. Fanglin Che received the prestigious DOE Early Career Award, who plans to develop a computational approach to investigate the effects of electric fields on the production of carbon-neutral hydrogen from the catalysis of ammonia. This is a highly competitive award, and is another significant award since Associate Professor Dr. Hsi-Wu Wong received his NSF CAREER Award in 2019 and Associate Professor Dr. Gulden Camci-Unal received an NIH R01 Award in 2021, all first time in the department. Other research awards include an NSF award on upcycling waste plastics, an NSF Collaborative Award between UMass Lowell and Tufts University on pancreas-like engineered tissues, a DOE award on sparging systems for fusion energy, and a workforce development grant from the Massachusetts Life Sciences Center (MLSC) to expand students' lab skills in biomanufacturing. Our undergraduate and graduate students are very active in their research, summer interns, or 6-month Co-OPs, either here on campus, or in local biopharma companies and other fields across the nation. Derek Lovejoy, a senior student, received the Best Paper Award at the IPC APEX 2023 Conference in San Diego, in January 2023; he is currently pursuing his Master's degree in our Accelerated BS/MS program. Jason Pircio, an undergraduate student with a Nuclear Engineering Option, was featured in a list of six college students that the Boston Globe considers the next-generation leaders in climate technology in the Boston area; he did his intern at Commonwealth Fusion Systems in summer 2023.

We welcome you to stop by and take a look at our new department office areas if you stay local in the New England area, or come to visit us when you get close to the Greater Boston area.

Yours sincerely,

Zhiyong Gu  
Professor and Department Chair

## New Faculty



The department welcomes its newest faculty member, Dr. [Caitlin Morris](#). Dr. Morris officially joined the department as Assistant Teaching Professor in the Fall Semester of 2023. Dr. Morris' previous work is focused on utilizing CHO cell culture supernatant for host cell protein analysis via microfluidic electrophoresis, optimizing the titer of CHO cell culture processes, and utilizing multi-variate data analysis to gain a better understanding of the culture performance.

## Research and Faculty Accomplishments

### [Fanglin Che Wins Department of Energy Early Career Award](#)

[Fanglin Che](#), Assistant Professor of Chemical Engineering, has recognized with a Early Career Research Program award from the Department of Energy (DOE). She is one of the 93 scientists and engineers across the nation to receive this prestigious award. Dr. Che will receive a grant of \$875,000 to support her research into the production of carbon-neutral hydrogen from ammonia using novel catalysts. This is the second young investigator award of the department over the past five years. Dr. [Hsi-Wu Wong](#) received a National Science Foundation CAREER award in 2019.



## Researchers Developing Pancreas-Like Engineered Tissues



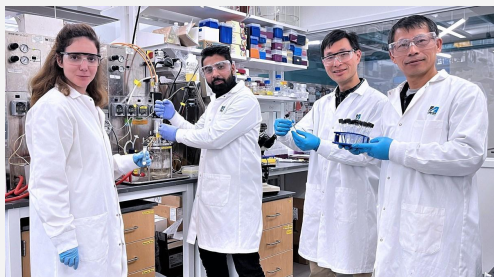
[Gulden Camci-Unal](#), Associate Professor of Chemical Engineering, was recently awarded a three-year collaborative research grant by the National Science Foundation worth nearly \$242,000 to develop bioartificial pancreas-like engineered tissues that could someday help improve the quality of life of people with diabetes. This work is in collaboration with Prof. Emmanuel (Manolis) Tzanakakis at Tufts University.

## Workforce Development Program to Expand Students' Lab Skills in Biomanufacturing

To help sustain the growth the biopharmaceutical industry and meet its projected workforce demands, the department has embarked on a biomanufacturing workforce development program that is geared toward undergraduates. The initiative, led by Dr. [Sanjeev Manohar](#), was developed in partnership with industry and is supported with a two-year, \$730,000 grant from the Massachusetts Life Sciences Center. Drs. [Seongkyu Yoon](#), [Carl Lawton](#), [Dongming Xie](#), and [Gulden Camci-Unal](#) also participate in the program.



## Researchers Developing Technology to Help Upcycle Waste Plastics



Drs. [Dongming Xie](#) and [Hsi-Wu Wong](#) receive a three-year \$463,000 grant from the National Science Foundation to develop technology that would help reduce waste polyethylene through upcycling, a process in which discarded materials are converted into products of higher value than the original.

## [Department of Energy Funds Research on Sparging Systems for Fusion Energy](#)

The U.S. Department of Energy (DOE) has awarded a team of researchers, led Dr. [Subash Sharma](#), Assistant Professor in the Department of Chemical Engineering, a \$486,000 grant to design and analyze sparging systems for tritium removal from fusion energy liquid breeder blankets. This award is in collaboration with Idaho National Laboratory (INL).



## Student Success

### UML Student Receives Best Paper Award



Derek Lovejoy, a masters student enrolled in the five-year bachelor/masters program, won the Best Paper Award at the IPC APEX 2023 Conference for study on removing hazardous copper metal ions. He was tasked to complete this study by GreenSource Fabrication LLC during his internship during Summer 2022. Please find details following his [interview](#).

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## Senior Student Featured in the Boston Globe



UMass Lowell Chemical Engineering senior Jason Pircio is included among a list of six college students that the Boston Globe considers the next generation of climate technology leaders in the Boston area. Pircio, who interned with Commonwealth Fusion Systems, plans to find a job in climate tech or biopharma, or enroll in graduate school after graduation.

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