


# CATALYST



**BREAKTHROUGH COLLABORATIONS IN  
HEALTH, ENERGY, AND THE ENVIRONMENT**

Multidisciplinary research creates lasting impact for science, business, and people's lives.



University at Buffalo

Department of Chemical  
and Biological Engineering

School of Engineering and Applied Sciences

## CHAIR'S WELCOME

Dear UB CBE Community,

I am happy to present the latest edition of The Catalyst, our annual newsletter, back in both print and digital formats. As I write this, the fall semester is about to start. We are excited to return to a mostly in-person experience, but still have a bit of apprehension as we are entering new territory. In any case, seeing the campus fill with students over the past few days has felt wonderful.

As you will see in the following pages, we have been able to accomplish a lot over the past year, despite challenges of hybrid and online learning, limited occupancy in our research labs, and SUNY-wide budget cuts and spending restrictions. Thankfully, most budget issues were temporary, and financial operations are back to near-normal conditions. Three new faculty members joined the department in January, bringing us to the largest faculty size in the history of the department. Over the past few months, they have established their research groups at UB, launched new collaborations within and beyond CBE, and contributed to the department's research, teaching, and service missions.

This edition of The Catalyst highlights some areas of particular research strength in the department. These include (i) carbon capture, utilization, and storage (CCUS) activities that directly address one of the great challenges facing humanity – meeting our energy needs while managing climate change; (ii) cell, genetic, and tissue engineering as

exemplified by a new center being led by SUNY Distinguished Professor Stelios Andreadis; and (iii) computational biology, where our research strength has been enhanced by three new faculty hires over the past few years.

In these and other areas, we continue to conduct world-class research while educating outstanding students at the bachelor's, master's and PhD levels. The scale of our research effort, in terms of research expenditures, new funding, graduate student enrollment, and publication impact has continued to grow over the past year, and all signs point to further growth going forward. The many new skills that our faculty, staff, and students have built in the areas of online and hybrid teaching and learning will ultimately improve the experience we provide for all of our students.

Thanks for reading, and for your continued support of CBE@UB! Please keep in touch – we love hearing about the accomplishments and life events of our alumni and friends.

Cheers,



Mark T. Swihart

Chair, UB Distinguished Professor  
and Empire Innovation Professor



SUNY Distinguished Professor **STELIOS ANDREADIS**' research group is now supported by three new NIH R01 grants with a total value of \$5.7 million: a grant from the National Heart, Lung and Blood Institute, to study the role of immune cells in arterial regeneration and design functional cell-free vascular grafts for treatment of cardiovascular disease; a grant from the National Institute of Aging to understand skeletal muscle aging and rejuvenation using embryonic factors to rewire metabolism and epigenetics; and a grant from the National Institute of Dental and Craniofacial Research that focuses on development of engineering strategies to promote regeneration of salivary glands subjected to radiation therapy for cancer treatment.



UB Distinguished Professor **PASCHALIS ALEXANDRIDIS**, SUNY Distinguished Professor and Empire Innovation Professor Amit Goyal, and Associate Professor Marina Tsiannou [received a \\$555,000 grant aimed at recycling plastic packaging materials](#), funded by the REMADE Institute, a nonprofit organization seeking to bring together industry innovators, academic researchers, and national labs to enhance the nation's industrial competitiveness and lead the transition to a circular economy in the United States. Professor Alexandridis (and others) also received a prestigious \$2 million EFRI grant for the project ["Valorization of plastic waste via advanced separation and processing"](#) from the National Science Foundation.

Professors **HAIQING LIN** and **CHONG CHENG** have received an award for more than \$2.5 million for the project "Two-Dimensional (2D) Porous Material/Polymer Composite Hollow Fiber Membranes for Advanced Water Resource Recovery" from The Department of Energy (DOE) Office of Energy Efficiency and Renewable Energy (EERE).

Professor Haiqing Lin also received an \$800,000 award from the Department of Energy (DOE) for "Membrane Adsorbents Comprising Self-Assembled Inorganic Nanocages (SINC)s for Super-fast Direct Air Capture Enabled by Passive Cooling", and another \$250,000 award from the National Science Foundation for "Development of Polymeric Organosilica Membranes for Hydrogen Purification at 100 – 300°C," and was recognized as a UB Exceptional Scholar for Sustained Achievement. He was also promoted to full Professor in 2021.

Empire Innovation Professor **AMIT GOYAL** was awarded \$886,700 from the Office of Naval Research for the project "Defect-Engineering to Probe Attainable Flux-Pinning in Coated Conductors." [He has been appointed to the National Materials and Manufacturing Board of the National Academies of Sciences, Engineering and Medicine](#). He was also elected a Fellow of the Institute of Electrical and Electronics Engineering (IEEE).





# FACULTY AWARDS & HONORS



Professor **MIAO YU** was awarded \$800,000 from the Department of Energy (DOE) for the project “Direct Air Capture Using Trapped Small Amines in Hierarchical Nanoporous Capsules on Porous Electrospun Fibers” and \$310,000 for work on “Dehydration Membrane Reactor for Direct Production of Dimethyl Carbonate (DMC) from CO<sub>2</sub> and H<sub>2</sub>” from the Department of Energy (DOE).

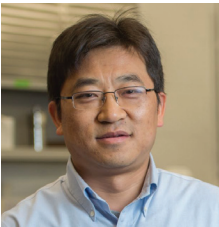
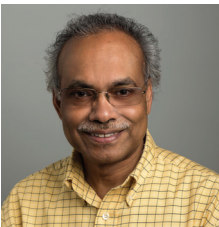
Professor of Research **MICHEL DUPUIS** received a Department of Energy (DOE) award of \$589,000 for the project “Charge Carrier Space-Charge Dynamics and Reactivity in Photo-electro-chemical Interfaces: Multiscale Computation and Simulation.” The department has also received a grant from the National Science Foundation to provide for Professor Dupuis’ work as program director in the Division of Chemistry, in particular the Chemical Theory, Models, and Computations (CTMC) and Chemical Catalysis (CAT) programs.



SUNY Distinguished Teaching Professor **JOHANNES NITSCHÉ** has received a \$114,000 National Science Foundation grant for research on dermal absorption of topical drugs. The total award is \$409,000 over three years in collaboration with Professor Gerald B. Kasting from the University of Cincinnati.



Empire Innovation Professor **THOMAS THUNDAT** has been elected Fellow of the Institute of Electrical and Electronics Engineers (IEEE) for his contributions to multi-modal microelectromechanical systems for chemical and biological sensors.



Professor **GANG WU** has received a 2021 SUNY Chancellor’s Award for Excellence in Scholarship and Creative Activities.



Associate Professor **MARINA TSIANOU** has received a 2021 SUNY Chancellor’s Award for Excellence in Teaching.



Associate Professor **ASHLEE N. FORD VERSYPT** will be serving in the national office of Past Chair of the Chemical Engineering Division of the American Society for Engineering Education.



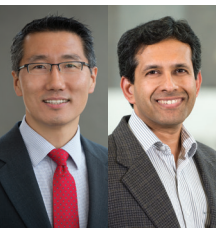
Professor **CHONG CHENG** was named UB School of Engineering and Applied Sciences 2020 Senior Career Researcher of the Year.



Assistant Professor of Teaching **DAVID COURTEMANCHE** was named UB School of Engineering and Applied Sciences 2020 Teaching Faculty of the Year.



**MARK SWIHART** is part of a university team which has recently received an \$8.5 million grant from the U.S. Department of Energy (DOE) to launch the [Center for Hybrid Rocket Exascale Simulation Technology \(CHREST\)](#) at UB.



Associate Professor **SHELDON PARK** and Professor **SRIRAM NEELAMEGHAM** were awarded \$422,000 from the National Institutes of Health (NIH) to study “Engineering of Glycosyltransferases to Obtain Glycan Binding Proteins”.

## Here is How We Keep Moving Forward



**\$11 MILLION**  
in new research  
funding, up 22%



**NEARLY \$300K/PI**  
in annual research expenditures



**152 PUBLICATIONS**  
Impact factor 10.554

**264**  
Undergraduate  
Students

**165**  
Graduate  
Students

## Chemical Engineers Addressing Climate Change

CO<sub>2</sub> emissions from burning of fossil fuels are the driving force behind global climate change. Thus, mitigating CO<sub>2</sub> emissions while providing the energy demanded by our society is one of the grand challenges facing humanity. As fossil fuels continue to serve as a major energy source, CO<sub>2</sub> capture for utilization and sequestration (CCUS) is a critical need. While the solutions require a concerted effort from every discipline, chemical engineers armed with distinctive expertise in mass transfer and reaction engineering are at the forefront of efforts to address this issue. The Department of Chemical and Biological Engineering at the University at Buffalo has a cohort of research groups developing holistic approaches for CCUS, including Professors [Chong Cheng](#), [Elina Kyriakidou](#), [Haiqing Lin](#), [Carl Lund](#), [Mark Swihart](#), [Gang Wu](#), and [Miao Yu](#). The synergistic collaborations of these groups have attracted more than \$10 million of research funding from federal agencies, such as the Department of Energy (DOE) and the National Science Foundation (NSF).

The three main categories of carbon capture technologies include precombustion capture, post-combustion capture, and direct air capture. In the precombustion process, fossil fuels are reformed or gasified to produce H<sub>2</sub> and CO<sub>2</sub>. Separation of H<sub>2</sub> and CO<sub>2</sub> enables H<sub>2</sub> production with CO<sub>2</sub> capture. Lin and Swihart's groups have been developing membranes with superior H<sub>2</sub>/CO<sub>2</sub> separation properties, including polymeric organosilica membranes ([ACS Nano](#), **15**, 12119 (2021)) and nanocomposite membranes containing Pd-based nanowires ([Journal of Materials Chemistry A](#), **9**, 12755 (2021)). In post-combustion capture, the Yu group has been developing graphene oxide- or carbon nanotube (CNT)-based membranes for CO<sub>2</sub>/N<sub>2</sub> separation ([Advanced Functional Materials](#), **30**, 2002804 (2020)), and Cheng and Lin's groups are developing highly polar polymers ([Joule](#), **3**, 1881 (2019)) and mixed matrix membranes containing nanocages ([Journal of Membrane Science](#), **606**, 118122 (2020)). Both Lin and Yu's groups have also been developing sorbents to directly extract CO<sub>2</sub> from the air, one of the few technologies that can directly reduce the CO<sub>2</sub> content from the atmosphere.

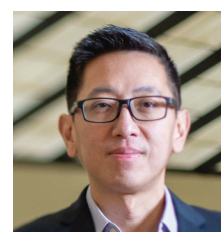
Another key step for CCUS technologies is to utilize CO<sub>2</sub> to produce useful chemicals or fuels at low-cost, which is inherently challenging because of the chemical stability of CO<sub>2</sub>. To this end, a variety of approaches are being explored, and the Department is well-positioned to tackle the challenge with expertise in thermal catalytic, electrochemical, and biological reactions. For example, the Yu group developed dehydration membrane reactors to convert CO<sub>2</sub> to fuels ([Science](#), **367**, 667 (2020)) and a process to produce dimethyl ether from CO<sub>2</sub> and H<sub>2</sub> ([Journal of Materials Chemistry A](#), **9**, 2678 (2021)); Swihart, Kyriakidou, and Lund are developing dry methane reforming catalysts to convert CO<sub>2</sub> and CH<sub>4</sub> to syngas (H<sub>2</sub> and CO) ([ACS Appl. Mater. Interfaces](#), **13**, 17618 (2021)); and the Wu group is developing single atomic metal electrocatalysts for selective CO<sub>2</sub> reduction to CO and C<sub>2</sub>H<sub>4</sub>. CO<sub>2</sub> can also be used to grow microalgae, which can then be used to produce nutrients and fuels. The Lin group is working with Helios-NRG, LLC (headed by Dr. Ravi Prasad, a CBE alumnus) to develop energy-efficient membranes for algae dewatering, an energy-intensive step in algae production.

The world-class CCUS research efforts in the CBE@UB serve as magnets to attract undergraduate, graduate, and postgraduate researchers. They provide training opportunities for these future leaders to tackle this grand challenge faced by our generation and those to come.



## Three New Faculty Boost Capabilities in Computational Biology

The Department of Chemical and Biological Engineering welcomes three new faculty who bring expertise in computational biology across different length and time scales.



Associate Professor **RUDI GUNAWAN** is an expert in computational systems biology and bioinformatics. His research revolves around the development of methods for biological network modeling and bioinformatics and the application of these methods to drug discovery for treatment of aging and age-related diseases, and to biomanufacturing of biologics. Dr. Gunawan has raised over \$3.5 million in total for his research, and he is the lead investigator for a recent \$2 million National Science Foundation HDR Ideas Lab grant.



Associate Professor **ASHLEE N. FORD VERSYPT** leads the Systems Biomedicine and Pharmaceuticals Laboratory. Her research spans the development of multiscale mathematical and computational models, their applications in understanding mechanisms governing tissue remodeling and damage in diseases and infections, and formulating treatments for these conditions. Her research program is funded by the National Science Foundation and National Institute of Health, and she has raised over \$2.6 million in total for her research. Dr. Ford Versypt is the recipient of a recent NSF CAREER award (2019) and ASEE Chemical Engineering Division Ray W. Fahien Award (2020). She is an Academic Trustee of Computer Aids for Chemical Engineering (CACHE) and an NSF Graduate Research Fellowship Faculty Fellow at UB.



Assistant Professor **VIVIANA MONJE-GALVAN** is an expert in computational biophysics and molecular biology. Her research focuses on the role of lipids in biological processes at the cellular membrane interface. She works with experimental collaborators to validate computational predictions and provide molecular level insights into macroscopic observations. In her postdoctoral work at the University of Chicago, she studied key protein-lipid interactions during early stages of HIV-1 viral assembly and SARS-CoV2 structural proteins.

Beyond research, Viviana is actively engaged with initiatives to promote engineering among minority students, such as EngineerGirl of the National Academy of Engineering, and the Louis Stokes Alliance for Minority Participation (LSAMP) Undergraduate Program at UB.



The combined research expertise of these new faculty boosts the department's research capabilities in the bioengineering and biophysics area, including the laboratories of Professor [Stelios Andreadis](#) and Assistant Professor [Natesh Parashurama](#) on stem cell engineering, Professor [Sriram Neelamegham](#) on glycobiology, Associate Professor [Sheldon Park](#) on protein engineering, and Professor [Blaine Pfeifer](#) on metabolic engineering. Further, their research aligns very well with the new [Center for Cell, Gene, and Tissue Engineering \(CTGE\)](#) led by Professor Andreadis. Across the school and university, these faculty strengthen research activities in drug discovery and pharmaceuticals. New and exciting collaborative projects have formed between the Gunawan and Andreadis labs on senescent stem cell rejuvenation, the Gunawan and Neelamegham labs on glycoinformatics, the Gunawan, Ford Versypt and Pinaki Sarder (Jacobs School of Medicine & Biomedical Sciences) labs on bioinformatics analysis and mathematical modeling of nephropathy, and the labs of Monje-Galvan and G. Ekin Atilla-Gokcumen (Chemistry) on molecular mechanisms of cell death. Many more collaborations are expected.





## UB is Expanding its Leadership in Regenerative Medicine

Earlier this year, the [University at Buffalo School of Engineering and Applied Sciences \(SEAS\)](#) announced the launch of a new [Cell, Gene and Tissue Engineering \(CGTE\)](#) Center to further enhance already cutting-edge research in the broad area of cell, gene and tissue engineering; to develop innovative engineering technologies for regenerative medicine; and to educate the future leaders in this field.

CGTE is already investing in high-end technologies to enhance our research infrastructure and is bringing together talented researchers from Chemical and Biological Engineering, Biomedical Engineering and other SEAS departments, the Jacobs School of Medicine and Biomedical Sciences, the School of Pharmaceutical Sciences and the School of Dental Medicine to promote innovation via interdisciplinary collaborations and make UB one of the leading institutions in this field, nationally and internationally.

Research in CGTE spans several areas including Stem Cell Engineering, Tissue Engineering and Regeneration; Biomaterials; Cell and Tissue Biomechanics; Gene, Protein and Drug Delivery (including novel vectors, vaccines and CRISPR technologies); Novel Imaging Technologies; High-Throughput Data Acquisition Technologies; BioMEMS; Omics (Genomics, Proteomics, Glycomics) and associated Systems/Computational/Big Data Engineering.



The CGTE will be directed by SUNY Distinguished Professor **STELIOS T. ANDREADIS**. Core founding faculty from CBE and BME include Drs. [Sriram Neelamegham](#), [Blaine Pfeifer](#), [Sheldon Park](#), [Natesh Parashurama](#), [Rita Alevriadou](#), [Jon Lovell](#), [Ruogang Zhao](#), and [Yun Wu](#).

We are broadening our research excellence through participation of faculty from diverse units such as Computer Science, Bioinformatics, Pathology and Anatomical Sciences, Cardiovascular Medicine, Geriatric Medicine, Oral Biology and Neuroscience.

CGTE aims to provide a platform to: (i) cultivate research collaborations among the Core and Affiliated CGTE faculty and their laboratory personnel; (ii) pursue funding in the form of multi-PI grants and training grants from federal and state agencies, as well as funding from private foundations; (iii) create a CGTE Core Facility to facilitate and enrich the research activities of the Core and Affiliated Faculty, and the UB scientific community at large; and (iv) build relationships with the biotechnology industry and facilitate entrepreneurial activities of our faculty and students.

Look for the CGTE newsletter to learn more about the new research facilities and the annual symposium being planned for spring 2022.

## HONORING THE LIFE OF ELI RUCKENSTEIN

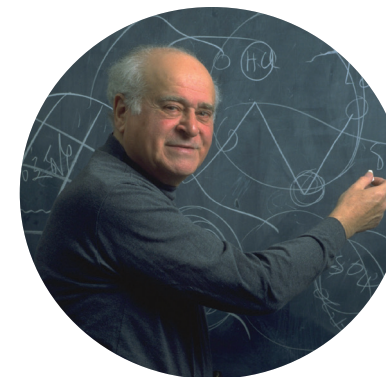
Eli Ruckenstein, a University at Buffalo faculty member for nearly 50 years who was awarded the U.S. National Medal of Science for his groundbreaking research in chemical engineering and other fields, passed away Sept. 30, 2020. He was 95.

Lauded for his prolific and imaginative research, Ruckenstein, SUNY Distinguished Professor Emeritus, was one of the most influential chemical engineers of his era, as well as one of UB's most renowned faculty members.

"Dr. Ruckenstein was a world-renowned scientist whose achievements revolutionized chemical engineering and had a profound impact on a wide range of other fields — from applied mathematics and computing to cancer research," said President Satish K. Tripathi. "He was held in the highest regard here at UB, and globally, for his limitless intellectual energy, innovation, and creativity, as well as his astonishing breadth of scientific knowledge."

*"Without question, he distinguished himself as one of the most eminent faculty members in the history of our institution, and one of the most eminent scientists the world has ever known."*

—Satish K. Tripathi, President



Kemper Lewis, dean of the School of Engineering and Applied Sciences, said Ruckenstein represented the very best of UB and epitomized the university's mission of academic excellence and making a positive impact on the world. "Put simply, Eli Ruckenstein exemplified what it means to be an engineer. He was inquisitive, thought-provoking, and tireless in his pursuit of knowledge, always with the goal of pushing scientific discovery into new and boundless directions," Lewis said. "His legacy and impact are globally renowned, and he will be dearly missed."

In 1973, Ruckenstein was recruited to UB as Faculty Professor of Engineering and Applied Sciences. In 1981, he was named SUNY Distinguished Professor, and he remained an extraordinarily productive member of the faculty for the rest of his life, authoring more than 900 additional journal publications, continuing long past his formal retirement in 2011. He authored roughly 50 papers after his 90th birthday, including a dozen in 2019 and several more in 2020.

For more than 45 years, Ruckenstein played a major role in the growth and development of what is now the Department of Chemical and Biological Engineering at UB. He brought national attention to the department, mentored dozens of students, researchers, and young faculty members, and provided advice to generations of department chairs.

During his five decades in the U.S., Ruckenstein received countless honors for his groundbreaking contributions across many fields of research, most notably the National Medal of Science, which he received in a White House ceremony in 1999. Ruckenstein was elected to the National Academy of Engineering in 1990 and received the Founders Award from the Academy in 2004, an honor bestowed on a single engineer each year across all disciplines. In 2012, Ruckenstein was elected to the American Academy of Arts and Sciences.

Ruckenstein was also known among colleagues and friends for being an extraordinarily driven yet compassionate human being. While intensely focused on his research and dedicated to the success of his students and colleagues, he was deeply concerned with broader issues, including world history and philosophy.

He is survived by his wife, Velina, his son Andrei and daughter Lelia, their respective spouses, Shelagh Leahy and James O'Malley, and two grandchildren, Olivia and Leo Ruckenstein.

The Department plans to hold a symposium in Professor Ruckenstein's honor when conditions allow.



## UB CBE GRADUATE PROGRAM UPDATE



### Mathematical modeling gave insights into stochastic factors controlling aging.

Graduate student **JILLIAN ANNIS** (MS, 2019) from the [Rudi Gunawan](#) laboratory developed a mathematical model of heat-shock response (HSR) for studying the heterogeneity of aging and lifespan in nematode worms. Model-based analysis of high-throughput single worm data, generated using microfluidic systems by research collaborators at ETH Zurich (Switzerland), showed that individual worms exhibit different HSR dynamics and that such differences can be attributed to variability in their protein homeostasis (proteostasis). Her mathematical model further indicated a stochastic collapse of proteostasis in early life as a major contributor of HSR heterogeneity among worms, where those suffering from the stronger decline in proteostasis had significantly shorter median lifespan. The work was featured as the Inside Back Cover of *Small* (Vol. 17, Iss. 30), a prominent journal covering multidisciplinary science at the nano- and microscale (2020 IF: 13.328).

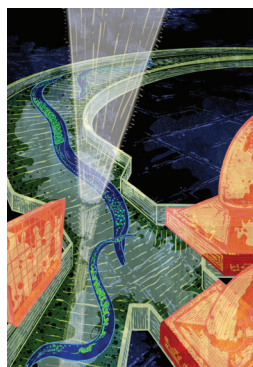


Illustration: Yujia Ma

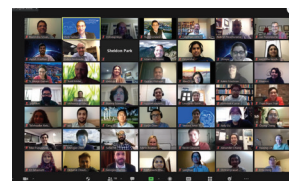


### Haryana Thomas has been named UB SEAS Leadership Development Fellow

**HARYANA THOMAS** has been awarded a \$1500 scholarship and a mentorship experience with School of Engineering and Applied Sciences Dean Kemper Lewis. The [UB SEAS Leadership Development Fellow program](#) focuses on development of the Fellow as a researcher, mentor, and leader. A PhD student in the [Ashlee N. Ford Versypt](#) research group, Mr. Thomas is a member of the [National Organization for the Professional Advancement of Black Chemists and Chemical Engineers \(NOBCCHE\)](#) and a past member of the [National Society of Black Engineers \(NSBE\)](#). He currently volunteers at [Peer Servants](#), a microfinance organization that helps the poor in developing countries to start businesses.

*"I am thrilled to be able to engage in our leadership development curriculum with Haryana. He has already demonstrated his capacity for leadership in his scholarship and service initiatives. I am excited to see the impact Haryana is going to have not only here at UB but nationally and globally as a thought leader."*

*-Kemper Lewis, Dean, School of Engineering and Applied Sciences*



## UB CBE Graduate Research Symposium

Nearly 200 people participated in the [2020 UB CBE Graduate Research Symposium](#), held on November 10 as the 23rd in the department's history and the first in an all-virtual format. The department took the event online with nearly 60 posters presented in 7 parallel sessions. The best presentation from each session was selected by nearly 50 alumni and members of the research community who served as volunteer judges. Participants gathered in a virtual lecture room for talks ranging from reinventing medicine to forever chemicals and molecular models, delivered by keynote lecturer [David Geer, BS 1999, PhD 2005 \(Andreadis group\)](#), and PhD candidates [Navneeth Gokul \(Kofke group\)](#) and [Samhitha Kancharla \(Alexandridis/Tsianou groups\)](#). Congratulations to our poster winners, and many thanks to everyone who made this year's symposium a memorable event:

- » **Pihu Mehrotra** - "Metabolic and Epigenetic Rewiring Mediated by Wnt-BMP Axis Preserves Neural Crest Stem Cell Identity", Advisor: Stelios Andreadis
- » **Theodore Groth** - "A Systems Based Framework to Deduce Transcription Factors and Signaling Pathways Regulating Glycan Biosynthesis", Advisor: Sriram Neelamegham
- » **Saber Meamardoost** - "Understanding Neuronal Network Dynamics During Motor Skill Learning Through a Model Free Connectome Inference Method", Advisor: Rudi Gunawan
- » **Shreya Mukherjee** - "Precious Metal Free Catalyst for Hydrogen Generation From Ammonia", Advisor: Gang Wu
- » **Leonardo Gobbato** - "Calcium Biomineral Formation and Growth in Hydrogel Media", Advisor: Marina Tsianou
- » **Venus Amiri** - "Formation and Manipulation of Ferrofluid Droplets With Magnetic Fields in a Microdevice: A Numerical Parametric Study", Advisor: Mark Swihart
- » **Arpit Bansal** - "A Software Module for Calculation of Virial Coefficients of Macromolecules", Advisor: David Kofke

Save the Date for UB CBE's 24th Annual Graduate Research Symposium, October 29, 2021, featuring University of Akron Professor and UB CBE Advisory Board Member [Donald P. Visco Jr.](#)



### Saber Meamardoost Won 3rd Place in the Fifth Annual 3MT Competition

CBE PhD Candidate **SABER MEAMARDOOST** earned 3rd place in the fifth annual [Three Minute Thesis \(3MT\)](#) competition for his work on using network inference to understand neuroplasticity in the brain during learning. He is a PhD student in the Rudi Gunawan research group.

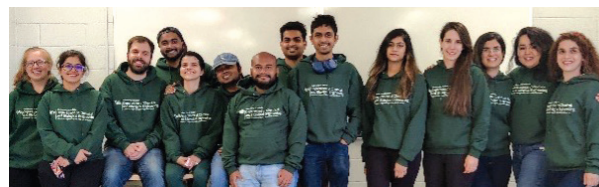
## UB CBE GRADUATE STUDENT ASSOCIATION NEWS

As we started another socially distanced academic year, I was honored to be elected as the President of the [Chemical and Biological Engineering Graduate Student Association \(CBE-GSA\)](#) and lead our first all-female executive board! Had it been any normal time, we would have had multiple interactions in person, such as conversations and ideation during breakfast socials, a symposium after party, and our annual bowling event. But because the COVID-19 guidelines prohibited us from organizing any in-person events throughout the semester, we had to find ways for the Association to fulfill its role, albeit virtually. One initiative was to design and distribute custom-made CBE hoodies to students in the department, and I am glad to report it was well-received by everyone! We also hosted a virtual meet-and-greet event for the newly admitted students for

the Fall 2021 semester, to provide a platform to interact with us and be well prepared, as they commence the exciting journey of being part of UB CBE.

I have had a great time interacting with my peers, as well as the staff and faculty. Serving in this capacity has been a very rewarding experience for me. Here's hoping that we will be able to have many more in-person events for all of us to enjoy together soon.

—[Pihu Mehrotra](#), CBE GSA President, 2020-2021



## UNDERGRADUATE PROGRAM

Needless to say, the past year for our [undergraduate program](#) was like none other. Faculty spent the summer preparing new ways to handle the move to fully remote teaching (or in the case of the lab courses, how to carry out socially distanced, in-person experimentation). We reached out to students at their homes to learn about their concerns, and to assure them that their education would continue in the Fall without loss of quality. We also reached out to other lab instructors through one of AIChE's Virtual Communities of Practice and obtained valuable advice and support. Throughout the Fall and Spring semesters, both students and faculty displayed more patience than usual with each other, and the academic year was completed well in nearly every respect. Labs continued with in-person instruction, although accommodations for social distancing required some creative scheduling of the spaces. Also, we introduced one virtual lab activity in the Fall using a catalytic reactor simulator from [LearnChemE.com](#). For the Spring semester, we began using the PetroSkills simulation package. This software is normally used to train chemical plant operators using a control room view and a virtual reality outside view, but the developers saw an opportunity

in undergraduate education, and made it available to universities as well. We found the system beneficial in its own right, and we plan to continue to use it as a component of lab teaching in the future. We capped off the Spring semester with an outdoor Commencement ceremony, and the weather cooperated in a spectacular fashion; it was a great event for all involved. In other news, in December we completed a successful ABET accreditation visit (virtually, of course), with no formal concerns raised by the evaluators. In fact, the assessment platform we use to facilitate evaluation of our teaching was cited as a strength for the entire School of Engineering. We apply this tool as part of our continuous improvement efforts, aiming to make the undergraduate program ever better, year after year.



—[David A. Kofke](#),  
SUNY Distinguished Professor and  
Director of Undergraduate Studies

## AIChE STUDENT CLUB NEWS

In the 2020-2021 school year, student activities at the University at Buffalo were limited due to Covid-19 precautions. Many clubs had to forgo activities and trips that they would usually partake in. I hope to bring the club back to normalcy. Like previous years, I will be trying to help network students with local companies to further their knowledge

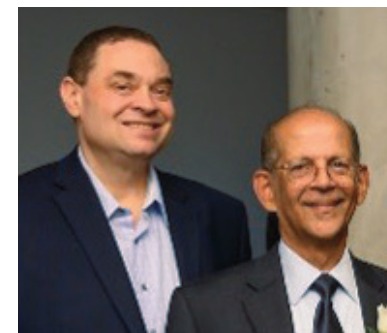


of chemical engineering and their eventual career options. There will be tours of plants, speakers coming to UB, and lunches with professors to accomplish this. I also plan to have the club visit museums and local businesses that display accomplishments of chemical engineers. These are a few things I wish to do, but my overall goal is to create a fun environment for my fellow students. We're looking forward to a great year!

—[Jacob Freehart](#), AIChE Student Club President 2021-2022

## ALUMNI NEWS

### CBE Alumnus Milind Ajinkya Receives Distinguished Alumni Award



Professor and Chair Mark Swihart  
and Milind Ajinkya

CBE alumnus and advisory board member [DR. MILIND AJINKYA](#) has received the Distinguished Alumni Award from the School of Engineering and Applied Sciences. After earning his MS in 1972 and PhD in 1975, Dr. Ajinkya spent 35 years in reaction engineering at the Exxon Research and Engineering Company before retiring. He currently serves on the advisory board for the Department of Chemical and Biological Engineering.

*"In CBE, we are delighted to see Milind receive this well-deserved recognition. With his successful and rewarding career and lifelong connection with and support of the department, he is a true role model for our students and alumni."*

—[Mark Swihart](#), Department Chair,  
UB Distinguished Professor, and  
Empire Innovation Professor

### UB CBE Advisory Board Has Formed Committees to Support Prospective and Continuing Students

Members of the department's [advisory board](#) have been working to provide more information regarding careers in chemical engineering to students at the high school level, and to mentor our current students with career-related advice. The board believes that students who are interested in STEM subjects need greater exposure to the myriad opportunities that are available to them as a chemical engineer. They will attempt to do just that by reaching out at the high school level to visit more frequently and talk to students about the opportunities that await them. For our current students, members are working to locate mentors among UB CBE alumni who will work one-on-one with students to provide professional development and career advice. If you are interested in participating in this initiative, please visit us online at [www.cbe.buffalo.edu/alumni](http://www.cbe.buffalo.edu/alumni) or call us at 716-645-2909.



# STAFF NEWS



**JOAN WILSON**, Director of Administration, has received the Dean’s Award for Excellence in Service. She has been an essential component in improving the department’s facilities operations, staff efficiency and effectiveness, department visibility, and relationships with alumni and friends over the past 10 years. The dean’s award is recognition of her essential service and contributions to the advancement of the department and the school.



**MARLO ROETZER**, Academic Coordinator, has received the Dean’s Award for Outstanding Customer Service, for consistently providing exemplary service to both faculty and students. Marlo was also elected as a Senator for [UB’s Professional Staff Senate \(PSS\)](#) to represent Area 2–Core Campus Academic Units and continues to maintain a membership in UB’s Undergraduate Advisement Council; the department’s Undergraduate, Graduate, and Graduate Student Recruitment Committees; SEAS Scholarship Review Committee; and the PSS Staff Development and Engagement Committee. She also chairs the PSS Welcoming Subcommittee, where she manages events and networking opportunities.

Welcome **LISA ZIMMERMAN**, UB CBE Research Administrator. She has taken over for Lori DuVall–Jackson. In addition to handling CBE’s student appointments and tuition, she will devote time to grant budget coordination and related human resource functions. Ms. Zimmerman has a solid background in both research and graduate student services, and the UB CBE community is very lucky that she has agreed to join us.

Facilities and Operations Coordinator, **TODD NIBBE**, spends lots of his free time with a rotating cast of K–9s. Since 2011 he has fostered more than 90 dogs and was recently appointed to the board of directors for [Awesome Paws Dog Rescue](#), which launched in 2017. On campus, Todd has been a member of the [PSS Sustainable Living Committee](#) for a several years, and enjoys the events and information that the group adds to the UB Community. The committee hosts electronic recycling and clothing drives, an annual Sustainable Living Fair and recently launched a zoom series featuring various UB and WNY people and organizations, sharing a wealth of knowledge on a wide range of topics.



UB CBE congratulates Graduate Academic Services Secretary **LORI DUVALL-JACKSON** on her recent retirement. Ms. DuVall–Jackson served for 15 years at the University at Buffalo and 7 years in the Department of Chemical and Biological Engineering. Throughout her service, she has been a creative problem solver for our students and a valued advisor and counselor to them, significantly enhancing the student experience. She received the SUNY Chancellor’s Award for Excellence in Classified Service in 2019. Most recently, she has also worked with SUNY Distinguished Professor Stelios Andreadis in administering the SCiRM (Stem Cells in Regenerative Medicine) project funded by NYSTEM (New York State Stem Cell Science). An energetic and passionate advocate for wildlife and the preservation of elephant species around the globe, she is an Ambassador for [The Elephant Sanctuary in Tennessee](#) and a field researcher for [Wildlife ACT in South Africa](#). She has traveled to Africa and around the United States to volunteer her time, and lectures locally on the importance of the preservation of wildlife and elephant habitats. We wish her well in all her future endeavors.

# STAFF NEWS

*“Lori was the first person I met when I joined CBE and no one could have done a better job to make it feel like home. She is a responsible and kindhearted person, who goes above and beyond to help you. She will be sincerely missed at Furnas Hall.”*  
–Venus Amiri, PhD student

*“Lori Duvall–Jackson, I am forever indebted to your kindness, patience, advice, and support throughout my time at UB. UB has lost a staff member who went above and beyond her job description, truly a one–of–a–kind person.”*  
–Ogechi Ogoke, PhD 2021

*“It is pleasure to share the story of Lori. She is a nice person and a good friend, who helps me and my colleagues with almost everything during our PhD academic life, including payroll, health insurance, registration, and more. She is always patient and willing to guide us step by step. We are lucky and happy to have Lori in our department.”*  
–Menjie (Jackie) Chen, PhD candidate 2021

*“Being international students, we face a lot of stressful challenges during our graduate training. Lori has always gone above and beyond to tackle these challenges on our behalf so we can focus on our scientific work. She cared so deeply and always took the time to connect with students on a personal level. She was like a skillful and resourceful friend that you can always rely on.”*  
–Arezo Momeni, ME 2009, PhD candidate 2021

*“Lori showed she deeply cared about her graduate students by always being kind and dependable for any kind of issue, whether it was HR related, paperwork, or something personal, and by always celebrating all kinds of holidays observed by our diverse student body. She will truly be missed by all of the graduate students.”*  
–Gabrielle Chapman, PhD student

*“Lori always went above and beyond for us, and cared about my well-being – both professional and personal, and gave us a sense of security. CBE won’t be the same without her.”*  
–Priyanshu Vishnoi, PhD student

*“Lori genuinely cares about the CBE graduate students and treats them like family.”*  
–Aref Shahini, ME 2018, PhD 2020



# Congratulations to Professor David A. Kofke

 **University at Buffalo**  
Department of Chemical  
and Biological Engineering  
School of Engineering and Applied Sciences

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Buffalo, NY 14214

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SUNY Distinguished Professor [David A. Kofke](#) is the recipient of the UB CBE Walter E. Schmid Chair in Chemical Engineering. Returns from the \$1 million endowment will allow him to pursue exciting new research directions in the coming years and give a graduate student greater intellectual freedom than would be possible with current funding. Prof. Kofke is a globally recognized leader in the development of molecular simulation and statistical mechanical methods for prediction of fluid properties. He served as Department Chair of UB CBE from 2006 to 2012, and currently serves as Director of Undergraduate studies. Both his research and teaching activities have been recognized with numerous awards.



*Professor Kofke  
at the Taj Mahal during a  
workshop and conference  
in Feb., 2020*

## CBE is delighted to announce that the Walter E. Schmid Family Foundation has established a \$1M endowment to create the [Walter E. Schmid Chair in Chemical Engineering](#)

**SUNY Distinguished Professor David A. Kofke has been selected as the first holder of this chaired professorship.**



In 1959, together with James Meyers, Walter founded Chemical Design, Inc. (CDI) in Lockport, NY, where the company is still going strong. CDI specializes in purification of gases and liquids, using molecular sieves and other catalysts. Mr. Schmid developed many new processes that are still used in chemical plants today. One of these technologies was a leap forward in safety and reliability for air separation plants. Another is critical for growing silicon for use in solar cells and computer chips. The success of CDI provided the basis for establishing the Walter E. Schmid Family Foundation as a philanthropic entity, which also generously supports an undergraduate scholarship in the School of Engineering and Applied Sciences at UB.

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**University at Buffalo**

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