NJIT New Jersey Institute of Technology

OTTO H. YORK DEPARTMENT OF CHEMICAL AND MATERIALS ENGINEERING

Fall 2021 CME E-Newsletter

Message from the Chair

Dear Friends,

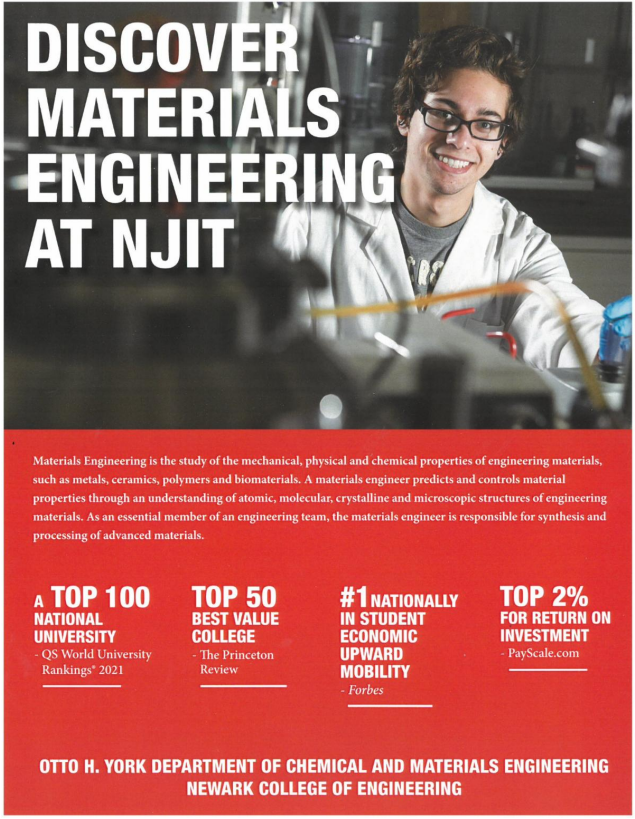
I hope this message finds you well. This fall we welcomed students back on campus to in person classes. We are all appreciative to once again have this community experience. I am delighted to share some of the exciting news from the Department including recent faculty awards and student accomplishments.

From all of us, we wish you a healthy, happy, and prosperous year ahead!

Lisa Axe
Professor and Chair

VISIT CME WEBSITE

New BS in Materials Engineering Program Starting Fall 2022!



In Fall 2022, we are welcoming our first cohort in the BS Materials Engineering Program. Our curriculum is hands-on beginning the first year with a fundamentals of engineering design experience. We have hired seven new faculty in the last 5 years, three new senior university lecturers, and a new laboratory director for the materials engineering undergraduate labs. Professor David Venerus who joined the Department a little over 3 years ago serves as the Program Director.

More Information on the BS MTEN Program

UPCOMING EVENTS

AIChE Regional Meeting at NJIT

On April 8-9, 2022 NJIT's Otto H. York Department of Chemical and Materials Engineering will, for the first time in its history, host the **American Institute of Chemical Engineers (AIChE)** Regional Student Conference. This event will be 2 days of career information, social events, engineering competitions, and fun! Student engineers from **AIChE's Mid-Atlantic region** schools will celebrate the Chemical Engineering profession, along with young professional members, AIChE leaders, and industry professionals from numerous engineering specialties. A highlight of the conference is the AIChE's **Chem-E-Car Competition®**, which engages college students in designing and constructing a car powered by a chemical energy source that will safely drive over a given distance and stop within a specified time limit. The event will be broadcast for free in real time virtually. Learn more about the conference here: **https://aiche2022.njit.edu/**

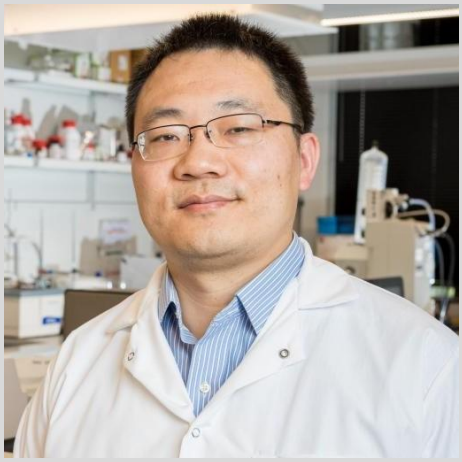
Diversity, Equity and Inclusion (DEI) Colloquium
New Jersey Institute of Technology (NJIT)
March 2, 2022

In an effort to increase awareness about institutional and university wide issues surrounding Diversity, Equity and Inclusion (DEI), the Newark College of Engineering has begun an initiative to bring leading experts in these fields to NJIT on an annual basis for what we are calling the DEI Colloquium.

Our inaugural DEI Colloquium will take place at NJIT on **Wednesday, March 2, 2022** at 2:30 PM in-person and live stream (invitations will be forthcoming).The invited speaker this year is Dr. Bevlee Watford, the Associate Dean for Equity and Engagement and the Executive Director of the Center for the Enhancement of Engineering Diversity at Virginia Tech. Dr. Watford has been influential in engineering education for over 20 years.

FACULTY HIGHLIGHTS

Development of a Timed-Release mRNA Vaccine with an Extended Shelf Life



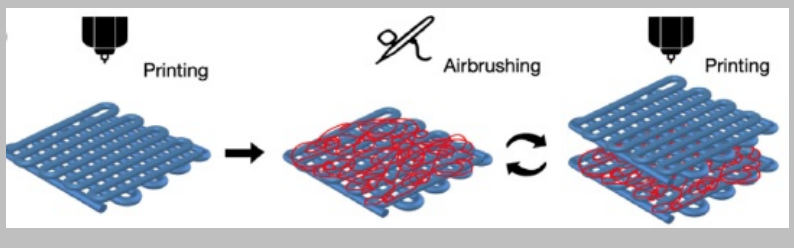
Xiaoyang Xu, associate professor, in the chemical and materials engineer at NJIT who specializes in nanomedicines, has secured a $1 million award from the Gustavus and Louise Pfeiffer Research Foundation to develop the next generation of messenger RNA (mRNA) vaccines.

READ MORE

AIChE 2021 'Futures' Issue Highlights Murat Guvendiren's Work

Dr. Guvendiren's research team developed a hybrid printing approach by combining airbrushing with 3D-printing to integrate nanofibrous membranes within 3D-printed scaffolds to control seeded stem cell infiltration. The fibrous membranes incorporated within 3D-printed layers enabled user-defined and spatially controlled cell compositions within hybrid scaffolds. This study is highlighted in the AIChE 2021 'Futures' Issue. 'Futures' issue highlights pioneering early career research in chemical engineering.

This study was led by Dr. Guvendiren and his postdoc Dr. Chya-Yan Liaw. The co-authors include former BS students Shawn Huynh (CHE 2020) and Caroline D'souza (BME 2021), former MS student Christina Gedeon (Pharma. Eng. 2019), former PhD student Shen Ji (CHE 2020), and current PhD candidate Alperen Abaci (CHE). The article can be accessed here:
https://aiche.onlinelibrary.wiley.com/doi/abs/10.1002/aic.17475



Major Research Award Granted to North Bergen STEM Academy Through Dr. Boris Khusid at NJIT

North Bergen has been granted the opportunity to take part in two investigations, thanks to the generosity of Dr. **Boris Khusid**, a professor of chemical and materials engineering. This opportunity will allow North Bergen students to be part of a larger and longer term (4 year) study in this technology through the National Science Foundation. Students will study Fluid Dynamics in its relation to keeping electronics cool during long space flight.

Professor Mark Zhao Amongst List of Highly Cited Researchers

Mark Zhao, assistant professor of chemical and materials engineering, is among researchers recognized as the 2021 Highly Cited Researchers list from Clarivate.

READ MORE

New Member of the Early Career Research Board for Materials Today Energy

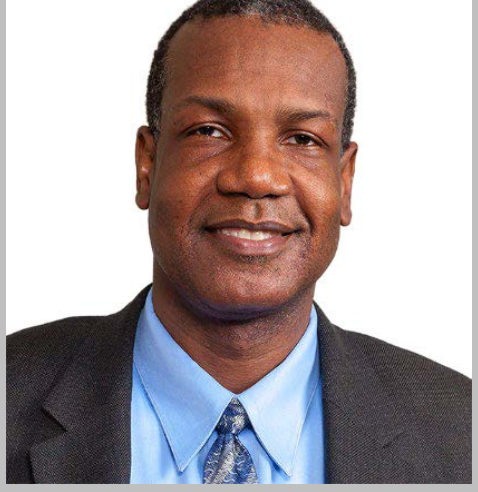
Joshua Young, assistant professor was invited to join the Early Career Research Board for *Materials Today Energy* (IF = 7.311), a part of the Materials Today family of journals focusing on work relating to the development of materials for energy harvesting, conversion, storage and distribution.

Materials Today Energy

Welcome New CME Faculty

The Otto H. York Department of Chemical and Materials Engineering welcomed **Dr. Kerri-lee Chintersingh**, assistant professor, in Fall 2021. She is a member of the Diversity, Equity and Inclusion Committee in the CME department. Her research interests are in energetic materials, catalysts, and tuning materials surfaces for reactions and consolidation. She is also interested in the use of artificial intelligence/ machine learning for anomaly detection and data mining and understanding materials reactions in extreme environments. Kerri-lee completed her postdoctoral training within the Hopkins Extreme Materials Institute at Johns Hopkins University and is a past alum at NJIT and the University of Technology, Jamaica. Dr. Chintersingh also served as a Process Control Engineer.

FACULTY PROMOTIONS



Laurent Simon promoted to Full Professor

Ecevit Bilgili promoted to Full Professor

FACULTY RESEARCH GRANTS

Professor **Gennady Gor** received a grant from Colgate-Palmolive Research Center "Uniqueness of arginine in CSPR toothpaste and its mode of action" to help develop new dentifrices using insights from molecular scales. He also received (as a Co-PI, PI: Ed Dreizin) a MSEE URA Seed Grant "Experimentally Validated Molecular Models of Organophosphorus Liquids" to predict the properties of chemical warfare agents and their surrogates from molecular simulation. These grants complement Gennady's fundamental research on compressibility of confined fluids, funded earlier this year by the NSF.

- **Ed Dreizin** (PI) and Murat Guvendiren (Co-PI) awarded continuation of their US Army/Advanced Technology International grant titled “Additively manufactured energetic components with high solids loading"
- **Ed Dreizin** awarded continuation of the DTRA grant titled “A URA for Materials Science in Extreme Environments"
- **Costas Gogos** (PI) and Don Sebastian (Co-PI) have been awarded continuation of their US Department of Army grant titled Technology Advancement and Retention Center (TARC)
- **Boris Khusid** awarded continuation of his NASA grant titled "Advanced Colloids Experiment-Temperature and Gradient Control"
- **Laurent Simon** awarded continuation of the Rutgers grant titled “Louis Stokes STEM Pathways and Research Alliance: Garden State LSAMP"
- **Xiaoyang Xu** has been awarded an NIH/New Jersey Alliance for Clinical and Translational Science grant titled “Therapeutic Development of Patient Cell-derived Exosomes Effective CVD Treatment”

RECENT JOURNAL PUBLICATION

Associate Professor **Roman Voronov's** recent paper "Review of Low-Cost 3D Bioprinters: State of the Market and Observed Future Trend" made the cover **https://lnkd.in/dVm_6fyZ** with an accompanying Podcast **https://lnkd.in/dQv28248** and authors Anh Tong, Quang Long Pham, Paul

Abatemarco, Austin Mathew, Dhruv Gupta, Siddharth Iyer, and Roman Voronov

CONGRATULATIONS AIChE STUDENT CHAPTER!!

This year NJIT's American Institute of Chemical Engineers (AIChE) student chapter once again achieved the ***Outstanding Chapter Award*** and ***Outstanding Student Chapter Award .*** NJIT AIChE Student Chapter Advisor: Roman Voronov, associate professor, Chemical and Materials Engineering.

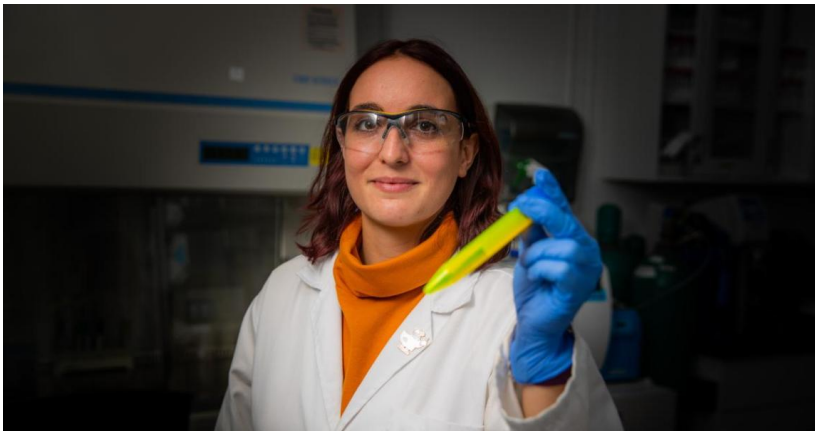
Congratulations to the 2022 AIChE E-Board Members!

Nicholas Amores- President
Raagavi Manivannan- Vice President of Internal Affairs
Nicole Balingit- Vice President of External Affairs
Stephany Cabrejos- Treasurer
Madison Cosgrove - Corresponding Secretary
Nicole Szponar - Recording Secretary

STUDENT RECOGNITION

CME Graduate Students Win GSA Research Showcase

Aida Lopez Ruiz, a chemical engineering doctoral student, won 1st place at the Graduate Student Association Research Showcase held at NJIT in December 2021. Ruiz is helping breast cancer patients through her research by putting chemotherapy drugs inside microscopic bits of platinum which only become toxic when they reach tumors. She's working with her advisor **Dr. Kathleen McEnnis** and undergraduate student Ashish Kokkula.



Alina Emelianova- 2nd Place Winner

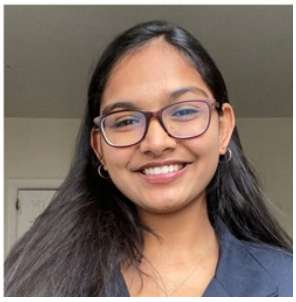
Alina Emelianova, a PhD student in the Otto H. York Department of Chemical and Materials Engineering was the 2nd place winner at the GSA Research Showcase. Her advisor is **Dr. Gennady Gor**.

Read more

AIChE Award Winners

Congratulations to the NJIT AIChE for winning the AIChE - American Institute of Chemical Engineers 2020-2021 Outstanding Student Chapter and Outstanding Sister Chapter Awards! Also congratulations to the student award winners:

- Ameera Seetahal - 2020-2021 Donald F. & Mildred Topp Othmer Scholarship Award (given out to just 15 students across the entire AICHE - $1,000 each)
- Darshi Shah - 2020-2021 Donald F. Othmer Sophomore Academic Excellence Award
- Nicole Szponar - 2020-2021 Freshman Recognition Award



2021 WIC Travel Award Winner

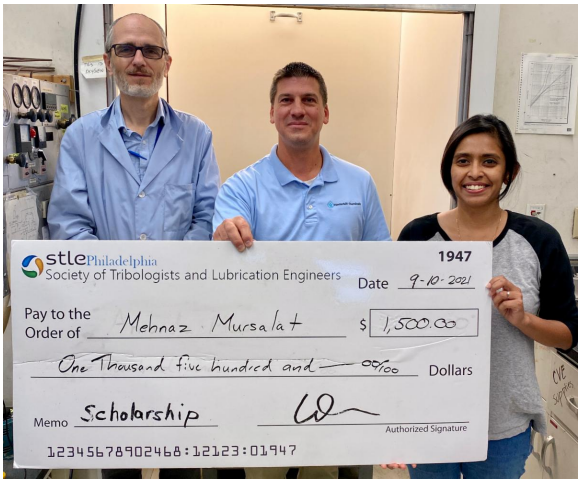
Ms. Gulenay Guner, a PhD student of Professor Ecevit Bilgili, has received a 2021 Women in Chemical Engineering Travel Award! The award will cover her registration for the 2021 AIChE Annual Meeting, along with an $800 stipend for her travel to the meeting. She will also be provided with

complementary membership to AIChE for the 2021 and 2022 calendar years. Congratulations Gulenay!

More NSF GRFP Info

Society of Tribologist and Lubrication Engineers Scholarship Winner

Mehnaz Mursalat, a PhD student in the Otto H. York Department of Chemical and Materials Engineering, advised by Professors **Edward Dreizin** and **Mirko Schoenitz** was awarded the 2021 scholarship from Society of Tribologists and Lubrication Engineers (STLE), Philadelphia.



2021 MSEE Undergraduate Research Award Recipients

Congratulations to our undergraduate researchers, Rostyslav Shkromiuk and Agata Skura who just received funding for Fall 2021 to continue their efforts for the University Research Alliance for Materials in Extreme Environments! Faculty Advisor: **Professor Edward Dreizin**
Read more: **https://lnkd.in/e3_fmSHx**

CME Research Centers

The Otto H. York Department of Chemical and Materials Engineering is home to three research centers.

NJ Center for Engineered Particulates (NJCEP)

- **Distinguished Professor Rajesh Dave**, Director: **NJ Center for Engineered Particulates (NJCEP)**. The center focuses on advanced particulate materials, where faculty are conducting fundamental research that combines experimental, computational, and theoretical studies to understand properties and behavore from the nano-to the macro-scale.

Membrane Science, Engineering and Technology Center (MAST)

- **Distinguished Professor Kamalesh Sirkar**, Director: **Membrane Science, Engineering and Technology Center (MAST)**. One of NSF's longest running industry/university cooperative research center (I/UCRC). The goal is to provide effective solutions in membrane technology.

Center of Materials for Advanced Energetics

- **Distinguished Professor Edward Dreizin**, Director: **Center of Materials for Advanced Energetics**. The center focuses on synthesizing new materials mechanochemically and studying the process computationally. Research includes studying ignition, combustion, and combustion products.


Happy Holidays