President Kelly Damphousse, Dr. Christopher Rhodes, and MSEC student, Samuel Kimmel, in the Advanced Energy Materials Lab.
Letter From the Director

I am so pleased to share with you this latest MSEC Matters. This past semester has been marked by changes and growth in MSEC, and I am excited to share these latest developments with you. As mentioned in the previous MSEC Matters, we are experiencing tremendous growth in MSEC; this summer and fall we will welcome 41 new PhD students, nearly doubling the size of the program.

To help manage this growth, we welcome our new Assistant Director of MSEC, Professor Anthony Torres, who will start his duties this summer. Prof. Torres has been a tremendous research advisor and mentor to many MSEC students, and the entire MSEC administrative team is excited to have his assistance in ensuring that all our MSEC students have the academic support and resources needed to succeed.

As we look forward to this growth, we also look back at our founding and the essential role played by key faculty members in planning and initiating MSEC. One of these founding members is Regents’ Professor Gary Beall. Professor Beall will retire from the University this summer after over 20 years of service, and this spring MSEC, the Department of Chemistry and Biochemistry, and the entire University community celebrated the impact that Gary has had here at Texas State since joining the faculty in 2001.

MSEC is on a trajectory of incredible growth and success as the entire University Runs to R1 status as a “very high research activity” institution, uniquely positioned to be an engine for innovation and economic growth for the state and beyond. In this edition of MSEC Matters, we share with you just some of the most recent aspects of this exciting journey.
New MSEC Assistant Director

Dr. Anthony Torres has joined the MSEC program as the new Assistant Director. Dr. Torres brings his years of experience in both materials science and mentoring doctoral students to the program starting summer 2023. As MSEC grows to nearly 100 students enrolled, Prof. Torres will be essential in assisting with all of the increased advising and administration that this growth entails. The addition of Dr. Torres and MSEC’s expansion will create more opportunities for the MSEC faculty to find the support they need to compete for new funding opportunities as the University makes its Run to R1.

Dr. Gary Beall's Retirement

On April 21, students and faculty of MSEC and the Department of Chemistry and Biochemistry, University administration, and family and friends gathered on-campus to celebrate Regents’ Professor Gary Beall on the eve of his retirement from the University. Professor Beall joined the Texas State University in 2001 as an Assistant Professor in the Department of Chemistry and Biochemistry after serving leadership roles in industry, most recently as Vice President and Technical Director at Amcol International. Prof. Beall was instrumental in the founding of MSEC in 2012, and has served as Associate Director of MSEC and Associate Dean of the College of Science and Engineering. His work on nanoparticles and their surface medications has resulted in numerous publications, patents, and books. Gary is not retiring so much as moving on to the next step in his career, which has been marked by entrepreneurship driven by advances in materials. Gary will be focusing his future efforts building up two companies that he has founded, and we wish him much success in this next phase of his illustrious career.
Faculty Awards

Dr. Jennifer Irvin

College of Science and Engineering’s College Achievement Award for Excellence in Service

Dr. Anthony Torres

Presidential Distinction Award for Excellence in Teaching

Dr. Carlos Moro Martinez

Dr. Moro and his students received 1st place in the 2023 Sustainability Exposition at Texas State University, organized by the Office of Sustainability, for their poster titled, “Effect of Dual CO2 Technologies on the Properties of Mortars with Slag Cement”.

Faculty Grants

Drs. Feng Wang, Xijun Shi, and Stacey Kulesza received a $10 million grant for the Coastal Research and Education Actions for Transportation Equity (CREATE) Center, a Tier 1 University Transportation Center (UTC), from the U.S. Department of Transportation.

Dr. Anthony Torres (PI) and Drs. Federico Aguayo, Xijun Shi, Carlos Moro, and Wilson Espinoza (Co-PI’s) received a $700,300 grant from the Texas Department of Transportation for their research project, "Developing a Performance-Based Concrete Overlay Mix Design for Improved Resistance to Early-Age Cracking and Increased Durability."

MSEC Faculty, Dr. Togay Ozbakkaloglu and MSEC students, Aamar Danish and Muhammed Bayram, received a $50,000 NSF I-Corps grant for their project titled, “StrucTrust: Artificial intelligence-based software package for end-to-end structural health monitoring of infrastructure systems”. In this project they worked on the development of an AI-based solution for real-time monitoring of the structural health of civil engineering infrastructure. This project explored the feasibility of smart and effective data processing, interpretation, and storage in the Internet of Things (IoT) and fiber optic-based structural health monitoring systems using Conventional Artificial Intelligence (CAI) and Computational Intelligence (CI).
MSEC Faculty Receiving Tenure and Promotion

Dr. Anthony Torres
Associate Professor to Professor
Department of Engineering Technology

Dr. Byoung Hee You
Associate Professor to Professor
Department of Engineering Technology

Dr. Jennifer Irvin
Associate Professor to Professor
Department of Chemistry & Biochemistry

Dr. Tania Betancourt
Associate Professor to Professor
Department of Chemistry & Biochemistry

Welcome
New MSEC Faculty

Dr. Joyce Anderson
Research Associate
Shared Research Operations
PhD in Materials Science, Engineering, and Commercialization

Dr. Karim Muci-Kuchler
Professor
Ingram School of Engineering
PhD in Aerospace Engineering and Engineering Mechanics

Dr. Jesus Jimenez
Professor
Ingram School of Engineering
PhD in Industrial Engineering

Dr. Michelle Londa
Associate Professor
Ingram School of Engineering
PhD in Polymer Science
Student Awards and Achievements

Aamar Danish

- Best paper award at Second International Conference on Construction Material and Structures (ICCMS-2022) for his paper titled, "Impact of nano-silica on the mechanical properties of mortar containing e-waste plastic as fine aggregates".
- 2023-2024 Graduate College Scholarship.
- 2023-2024 Student Government Scholarship.

Dipa Devkota

- Summer 2023 Graduate College Scholarship.
- Received an internship as a Device Process Engineer Intern at Applied Materials in Santa Clara, CA for Summer 2023.

Junaid ur Rehman

- Fall 2023 Graduate College Scholarship.
- Received an internship at Visionary Fiber Technologies in Lockhart, TX for Summer 2023.

Kushal Thapa

- 2022-2023 Outstanding MSEC Doctoral Student Award.
- 2023-2024 Graduate College Scholarship.
- Recipient of the NSF-PREM supplemental award for internship at Southwest Research Institute in San Antonio, TX for Summer 2023.
- Poster award at the MRS-NSF PREM Research Scholars Summit at the 2023 MRS Spring Meeting.
- 2023-2024 TXST Society of Plastics Engineers (SPE) Chapter Awards.
- TXST’s Deep Dive entrepreneurship workshop participant.

Md Abdul Halim

- 2023-2024 Graduate College Scholarship.
- Presented his poster, “Inkjet Printed Thin Film of Tetracyanonickelate-based Metal-Organic Framework as Solar Cell Material” at the 2023 TXST STEM Conference.

Muhammed Bayram

- Graduate College Scholarship ($1000)
- Student Government Scholarship ($2300)
Student Awards and Achievements

Muhammad Usama Salim

- Fall 2023 Graduate College Scholarship.
- 2023-2024 Student Government Scholarship.

Navid Hermmati

- Received an internship as Superintendent at Structural Technologies/VSL in Dallas-Fort Worth, TX in Spring and Summer 2023.

Oluwasola Arigbabowo

- 3rd Place Best Poster in SPE Polyolefin Conference Student Poster Competition
- Recognition for Academic Achievement from the TXST Society of Plastic Engineers (SPE) Chapter Awards
- Category Chair for Additive Manufacturing Track, SAMPE 2023 Conference, Seattle Washington
- 2023 Student Government Scholarship.
- 2023 TXST Society of Plastic Engineers Chapter Awards.

Samuel Kimmel

- Received his MBA through the Duel Degree MSEC Ph.D.-MBA Program
- Nominated by the Dean as the College of Science and Engineering’s Student Government’s Grad House Representative
- Awarded “Outstanding Service” award from the Graduate College for serving as a 2022-2023 Student Government’s Grad House Representative
- Received an internship as a Graduate Research Assistant at the Naval Research Enterprise Internship Program (NREIP) at the US Naval Research Laboratory in Washington DC for Summer 2023.

Tijani Mohammed

- 2023-2024 American Concrete Institute Fellowship & Scholarship.
- Graduate College Scholarship Fall 2023
- 2023 Student Government Scholarship.
- Presented two talks at the ACI Convention in San Francisco, CA titled, “Developing Sustainable Ultra-High-Performance Concrete Through the Use Of Rapid Setting and Hardening Cement” and, “Chloride Ingress and Chloride-Induced Corrosion In Concrete Produced With Calcium Sulfoaluminate Cement”.
- TXST Society of Plastic Engineers Scholarship Spring 2023.


Howlader, C. Q., Khakurel, N., Amyx, D. W., Geerts, W., Gibson, G., & Chen, M. (2022). Pin-hole free MAPb0.75Sn0.25(I0.5Br0.5)3 films spin casted without antisolvent by adding MAAc additive to Perovskite ink. https://icrepq.com/icrepq22/284-22-howlader.pdf


CONGRATULATIONS
GRADUATES!

ADVANCEMENT TO CANDIDACY

James Banks  
Advised by Dr. Anahita Emami

Binod D.C.  
Advised by Dr. Yoichi Miyahara

Luis Albiter  
Advised by Dr. Christopher Rhodes

Jacob Palmer  
Advised by Dr. Keisuke Ikehata

Navid Hemmati  
Advised by Dr. Soon-Jae Lee

Tijani Mohammed  
Advised by Dr. Anthony Torres and Dr. Frederico Aguayo

Farah Najdawi  
Advised by Dr. Tongdan Jin

Dean Koehne  
Advised by Dr. Nikoleta Theodoropoulou

Nischal Khakurel  
Advised by Dr. Yoichi Miyahara and Dr. Wilhelmus Geerts

Dr. Tanjina Ahmed  
Advised by Dr. Wilhelmus Geerts

Dr. Ikechukwu Kingsley Okechi  
Advised by Dr. Anthony Torres and Dr. Frederico Aguayo

Dr. Isha Desai  
Advised by Dr. Shannon Weigum

Dr. Amanda Gregory  
Advised by Dr. Tongdan Jin

Dr. Chandan Howlader  
Advised by Dr. Maggie Chen
The Materials Research Society (MRS) is an organization of materials researchers worldwide that promotes communication for the advancement of interdisciplinary materials research and technology to improve the quality of life. MRS Texas State University Chapter was inaugurated in July 2022 and is now connected to one of leading platforms of materials research professionals. Being a chapter member, students and professionals can have several benefits including but not limited to rebate on membership fee, travel support, special project grants, social events, professional development series, alumni connections, networking opportunities, free MRS bulletin, and so on.

From left to right: Dipa Devkota, Treasurer; Tanjina Ahmed, Secretary; Chandan Howlader, Vice President; and Md Abdul Halim, President.

Alumni Spotlight

Dr. Raju Ahmed

Dr. Ahmed graduated in the spring of 2018 and joined Micron Technology in Boise, Idaho, where he is currently working as a Senior R&D Process Development Engineer. Prior to joining Micron, he worked as a doctoral research assistant from 2014 to 2018 for the MSEC program under the supervision of Dr. Edwin Piner and Dr. Mark Holtz. During his US Army Research Office-funded Ph.D. research, he developed a novel method for direct metal-organic chemical vapor deposition (MOCVD) of crystalline GaN on polycrystalline diamond. Dr. Ahmed is the author of 5 US patents and 15 journal articles. His current research interests include EUV and immersion lithography, semiconductor memory, MOCVD growth of nitride semiconductors, and CVD diamond.
Austin venture firms, ATX Venture Partners, and Live Oak Venture Partners took part in the 2023 Spring Bootcamp focused on Technology Commercialization for PhD students studying Materials Science (MSEC) and Computer Science. Mike Marcantonio of Live Oak Venture Partners helped students learn what venture investors look for in a startup with the clever phrase, "[we want] aspirin, not vitamins" when selecting great startup ideas. This idea means that many venture investors want companies that solve real pain that customers have today, not possible future pains that are not pressing or urgent right now.

Mike's session was part of 3 sessions given to students as part of the bootcamp to learn what angel investors, VC investors, and other founders are looking for in a financing deal. On the final day of the bootcamp, a small competition judged by investors was held with the purpose of determining the best idea from this year's CS and MSEC PhD students. Similar to prior years, $1000 in prizes were up for grabs, as well as bragging rights and the opportunity to follow-up with investors. Brad Bentz of ATX Venture Partners, Mike Cubbage of Intel, and Art Olbert of Central Texas Angel Network (CTAN) were the finals judges and selected the winners. Three winners were chosen, with the top winner being Usama Muhammad Salim, an MSEC student with an idea for a self-healing concrete utilizing a patent pending micro-encapsulated self-healing polymer agent. His innovation would mean that cracks that may appear in any concrete structure such as foundations, buildings, roadways, and more would self-heal in a few days and regain some of their strength.

Runners up for the competition were MSEC PhD students Kendalle Howard and Krushi Lokhande who also had great ideas. Krushi's concrete idea was for a water repellant concrete which would resist absorption of water and therefore reduce cracking and issues related to water and freeze damage. Kendalle's idea was for a new sensor for your home air filter that tracks how many particles your filter is blocking. It could then tell you when to change your air filter and give you general information about your home's air quality.

Each of the 18 students who competed had their own original idea, and all were innovative and useful. For many of the PhD students who competed, this will not be the end of their idea. Many of the students will proceed with their startup ideas and some will go on to other competitions such as the Texas State New Ventures competition which is open to the public and being held June 17th.
Copper coated graphene z-stack using the Olympus Laser Scanning Confocal Microscope

Acquired by ARSC Staff