



# MSEC Matters



TEXAS STATE UNIVERSITY  
ISSUE V • SPRING 2023

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

# In This

## Issue

Letter From the Director: 2

Faculty Announcements: 3

Faculty Awards and Grants: 4

MSEC Faculty Receiving  
Tenure and Promotion: 5

New MSEC Faculty: 5

Student Awards and  
Achievements: 6 - 7

Student Publications: 8 -10

Advancing to Candidacy: 11

Graduates: 11

MRS Student Chapter: 12

Alumni Spotlight: 12

PREM Conference: 13

MSEC Entrepreneurship  
Bootcamp: 13

## 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.



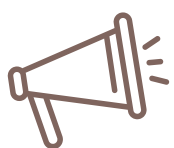
To help manage this growth, we welcome our new Assistant Director of MSEC, Professor Anthony Torres, who will start his duties this summer. Prof. Torres has been a tremendous research advisor and mentor to many MSEC students, and the entire MSEC administrative team is excited to have his assistance in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

A handwritten signature in black ink that reads "Sean Michael Kerwin".

Dr. Sean Kerwin  
MSEC Director



# Faculty Announcements:

## 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 CO<sub>2</sub> 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, Amar 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

## W E L C O M E 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.
- Received an internship as a Process Engineering Intern in the Engineered Optics Group at Applied Materials Inc., Santa Clara, CA for Summer 2023.
- 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

# 2022-2023 Student Publications

Ahamed, T.; Rahaman, I.; Karmakar, S.; **Halim, M. A.**; Sarkar, P. K. *Thickness Optimization and the Effect of Different Hole Transport Materials on Methylammonium Tin Iodide (CH<sub>3</sub>NH<sub>3</sub>SnI<sub>3</sub>)-Based Perovskite Solar Cell*. Emergent Mater. 2022. <https://doi.org/10.1007/s42247-022-00405-8>.

**Arigbabowo, O. K.**, Omer, L., & Tate, J. (2023). Fused filament fabrication of polyamide 6 nanographene composite for electrostatic discharge applications. *Materials Science & Engineering B*, 287. <https://doi.org/10.1016/j.mseb.2022.116086>

**Banks, J. D.**, and Emami, A. (2022). Carbon-Based Piezoresistive Polymer Nanocomposites by Extrusion Additive Manufacturing: Process, Material Design, and Current Progress. *3D Printing and Additive Manufacturing*, 2022. <https://doi.org/10.1089/3dp.2022.0153>

**Banks, J. D.**, Khaleghian, M., & Emami, A. (2023). Effects of Infill on the Additive Manufacturing of Piezoresistive Pressure Sensors. <https://doi.org/10.1115/IMECE2022-91749>

**Cantrell, S. R.**, Welch, E., Scolfaro, L. M., & Geerts, W. J. (2023). Opto-electronic properties of carbon doped NiO. *Journal of Physics and Chemistry of Solids*, 174. <https://doi.org/10.1016/j.jpcs.2022.111110>

**Chong, B. W.**, & Shi, X. (2023). Meta-analysis on PET plastic as concrete aggregate using response surface methodology and regression analysis. *Journal of Infrastructure Preservation & Resilience*, 4(1), 1–15. <https://doi.org/10.1186/s43065-022-00069-y>

**Danish, A.**, Mosaberpanah, M. A., Ozbakkaloglu, T., **Salim, M. U.**, Khurshid, K., **Bayram, M.**, Amran, M., Fediuk, R., and Qader, D. N. (2023). A compendious review on the influence of e-waste aggregates on the properties of concrete. *Case Studies in Construction Materials*, 18 <https://doi.org/10.1016/j.cscm.2022.e01740>

**Danish, A.**, Öz, A., Bayrak, B., Kaplan, G., Aydın, A. C., & Ozbakkaloglu, T. (2023). Performance evaluation and cost analysis of prepacked geopolymers containing waste marble powder under different curing temperatures for sustainable built environment. *Resources, Conservation & Recycling*, 192. <https://doi.org/10.1016/j.resconrec.2023.106910>

**Danish, A.**, & Ozbakkaloglu, T. (2023). Impact of nano-silica on the mechanical properties of mortar containing e-waste plastic as fine aggregates. *Materials Today: Proceedings*. <https://doi.org/10.1016/j.matpr.2023.03.182>

**Danish, A.**, & Ozbakkaloglu, T. (2023). Impact of nano-silica on the mechanical properties of mortar containing e-waste plastic as fine aggregates. <https://doi.org/10.1016/j.matpr.2023.03.182>

**Danish, A.**, Ozbakkaloglu, T., Ali Mosaberpanah, **M.**, **Salim, M. U.**, **Bayram, M.**, Yeon, J. H., & Jafar, K. (2022). *Sustainability benefits and commercialization challenges and strategies of geopolymer concrete: A review*. *Journal of Building Engineering*, 58. <https://doi.org/10.1016/j.jobe.2022.105005>

Gencel, O., **Bayram, M.**, Subaşı, S., Hekimoğlu, G., Sarı, A., Ustaoglu, A., Marasli, M., Ozbakkaloglu, T., Microencapsulated phase change material incorporated light transmitting gypsum composite for thermal energy saving in buildings, *Journal of Energy Storage*, Volume 67, 2023, 107457, ISSN 2352-152X, <https://doi.org/10.1016/j.est.2023.107457>



# 2022-2023 Student Publications (continued)

---

**Halim, M. A.**, Karmakar, S., Sourav Das, S., Geerts, W. J., Haque, A., & Beall, G. W. (2023). *Crystallite size-dependent magnetic moment in hydrogen bridged manganese tetracyanonickelate based two-dimensional metal-organic frameworks*. *Journal of Magnetism and Magnetic Materials*, 571.

<https://doi.org/10.1016/j.jmmm.2023.170573>

**Hemmati, N., Yun, J.**, Kim, H., Lee, M.-S., & Lee, S.-J. (2022). *Effect of Processed Oil on Asphalt Binder Properties*. *Materials* (1996-1944), 15(11), 3739.

<https://doi.org/10.3390/ma15113739>

**Hemmati, N.**, Vigneswaran, S., Kim, H. H., Lee, M.-S., & Lee, S.-J. (2023). *Laboratory Evaluation of Asphalt Binders Containing Styrene-Butadiene-Styrene (SBS) and Processed Oil*. *Materials* (1996-1944), 16(3), 1235.

<https://doi.org/10.3390/ma16031235>

**Hemmati, N.**, Vigneswaran, S., Mazumder, M., Lee, M.-S., & Lee, S.-J. (2023). *Laboratory Assessment of Modified Asphalt Binders Using Crumb Rubber Modifier (CRM) and Processed Oil*. *Construction Materials* (2673-7108), 3(1), 93–109.

<https://doi.org/10.3390/constrmater3010007>

**Howlader, C. Q., Khakurel, N.**, Amyx, D. W., Geerts, W., Gibson, G., & Chen, M. (2022). Pin-hole free MAPb0.75Sn0.25(I0.5Bro.5)3 films spin casted without antisolvent by adding MAAC additive to Perovskite ink.

<https://icrepq.com/icrepq22/284-22-howlader.pdf>

Khurshid, K., **Danish, A., Salim, M. U., Bayram, M.**, Ozbakkaloglu, T., and Mosaberpanah, M. A. (2023). *An In-Depth Survey Demystifying the Internet of Things (IoT) in the Construction Industry: Unfolding New Dimensions*. *Sustainability* 15(2),1275.

<https://doi.org/10.3390/su15021275>

**Kimmel, S.K., Koehne, B.D.**, Gibson, B., Geerts, FW.J., Theodoropoulou, N., Rhodes, C.P. (2023). *Structure and Magnetism of Iron-Substituted Nickel Hydroxide Nanosheets*. *Magnetochemistry*, 9(1), 25.

<https://doi.org/10.3390/magnetochemistry901002>

Li, F., Bondra, K. M., **Ghilu, S.**, Studebaker, A., Liu, Q., Michalek, J. E., Kogiso, M., Li, X.-N., Kalapurakal, J. A., James, C. D., Burma, S., Kurmasheva, R. T., & Houghton, P. J. (2022). *Regulation of TORC1 by MAPK Signaling Determines Sensitivity and Acquired Resistance to Trametinib in Pediatric BRAF(V600E) Brain Tumor Models*. *CLINICAL CANCER RESEARCH*, 28(17), 3836–3849.

<https://doi.org/10.1158/1078-0432.CCR-22-1052>

Meng, Q., El-Jaroudi, R. H., White, R. C., **Dey, T.**, Reza, M. S., Bank, S. R., & Wistey, M. A. (2022). *Effects of B and In on the band structure of BGa(In)As alloys*. *Journal of Applied Physics*, 132(19), 1–8.

<https://doi.org/10.1063/5.0125109>

**Mohammed, T.**, Aguayo, F., Nodehi, M., & Ozbakkaloglu, T. (2022). *Engineering properties of structural lightweight concrete containing expanded shale and clay with high volume class F and class C fly ash*. *Structural Concrete*, 1.

<https://doi.org/10.1002/suco.202200562>

Othman, R., Putra Jaya, R., Duraisamy, Y., Sulaiman, M. A., **Chong, B. W.**, & Ghamari, A. (2023). *Efficiency of Waste as Cement Replacement in Foamed Concrete—A Review*. *Sustainability* (2071-1050), 15(6), 5163.

<https://doi.org/10.3390/su15065163>

# 2022-2023 Student Publications (continued)

**Salim, M. U.**, Nishat, F. M., Oh, T., Yoo, D.-Y., Song, Y., Ozbakkaloglu, T., & Yeon, J. H. (2022). *Electrical Resistivity and Joule Heating Characteristics of Cementitious Composites Incorporating Multi-Walled Carbon Nanotubes and Carbon Fibers*. *Materials* (1996-1944), 15(22), 8055.

<https://doi.org/10.3390/ma15228055>

Subasi, A., Subasi, S., **Bayram, M.**, Sarı, a., Hekimoğlu, G., Ustaoglu, A., Gencel, O., Ozbakkaloglu, T., Effect of carbon nanotube and microencapsulated phase change material utilization on the thermal energy storage performance in UV cured (photoinitiated) unsaturated polyester composites, *Journal of Energy Storage*, Volume 61, 2023, 106780, ISSN 2352-152X,

<https://doi.org/10.1016/j.est.2023.106780>.

Sürücü, A. M., Subaşı, S., **Danish, A.**, Gencel, O., Subaşı, A., & Ozbakkaloglu, T. (2023). Mechanical and radiation shielding properties of SWCNT reinforced polymer/glass fiber fabric-based nanocomposite containing different filler materials: *A comparative study*. *Journal of Applied Polymer Science*, 140(7), 1-20.

<https://doi.org/10.1002/app.53483>

**Villarreal, R., Torres, A.**, Aguayo, F., & Moro, C. (2022). *Assessing the degree of Polish on hardened concrete air void parameters*. *Journal of Civil Engineering and Construction*.

<https://doi.org/10.32732/jceec.2022.11.4.177>

**Villarreal, R., Torres, A.**, Aguayo, F., & Moro, C. (2023). *An alternative test method for determining hardened air void parameters for concrete pavement*. *Journal of Civil Engineering and Construction*.

<https://doi.org/10.32732/jceec.2023.12.1.19>

**Yun, J.**, Choi, H. J., Na, I.-H., & Kim, H. H. (2023). *Characterization of Base Oil Effects on Aged Asphalt Binders Considering Bicycle Road*. *Materials* (1996-1944), 16(2), 624.

<https://doi.org/10.3390/ma16020624>

**Yun, J., Hemmati, N.**, Lee, M.-S., & Lee, S.-J. (2022). *Laboratory Evaluation of Storage Stability for CRM Asphalt Binders*. *Sustainability* (2071-1050), 14(13), 7542–N.PAG.

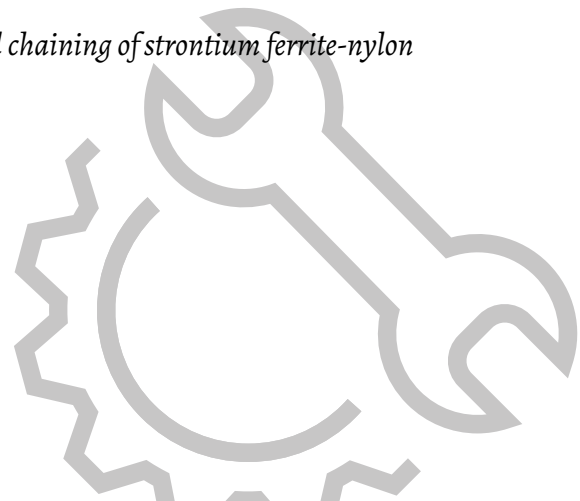
<https://doi.org/10.3390/su14137542>

**Yun, J.**, Vigneswaran, S., Lee, M.-S., Choi, P., & Lee, S.-J. (2023). *Effect of Blending and Curing Conditions on the Storage Stability of Rubberized Asphalt Binders*. *Materials* (1996-1944), 16(3), 978.

<https://doi.org/10.3390/ma16030978>

**Ahmed, T. N.**, Selsor, C., Tate, J. S., & Geerts, W. J. (2023). *Magnetic behavior and chaining of strontium ferrite-nylon composite above the melting temperature*. *AIP Advances*, 13(2), 1–7.

<https://doi.org/10.1063/9.0000596>



# 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

# CONGRATULATIONS GRADUATES!



**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

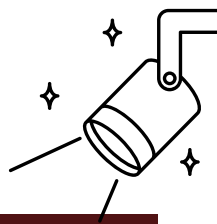


**Dr. Amanda Gregory**  
Advised by  
Dr. Tongdan Jin



**Dr. Chandan Howlader**  
Advised by  
Dr. Maggie Chen

# Materials Research Society (MRS) Student Chapter at Texas State University



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

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.



*Advancing materials. Improving the quality of life.*

## 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.

# PREM Conference

In March, MSEC Faculty and staff hosted the 2023 Texas PREM Conference, a gathering of all four Texas-based Partnerships for Research and Education in Materials (PREM) and their Materials Research Science and Engineering Center (MRSEC) partners at Texas State. Over 100 students and faculty from Texas State's PREM Center for Intelligent Materials Assembly (CIMA), UT Austin's MRSEC Center for Dynamics and Control of Materials, and PREMs from UT El Paso, UT Rio Grande Valley, and UT Arlington participated in the two-day event. Dr. Harlan Beverly, Lecturer in the Department of Management of the McCoy College of Business and MSEC faculty member, presented an interactive keynote talk on entrepreneurship. Dean Koehne, MSEC student with Dr. Nikoleta Theodoropoulou, presented an oral presentation on his research



on "Quantum effects in the electronic properties of epitaxial SrTiO" and Scott Barrett, MSEC student with Dr. William Brittain, presented an oral presentation on his research on "Liquid Azobenzene: Applications in Solar Energy Storage and Reversible Adhesives." The conference also included tours of materials characterization facilities including the ARSC shared laboratories as well as the laboratory of Dr. Yoichi Miyahara.



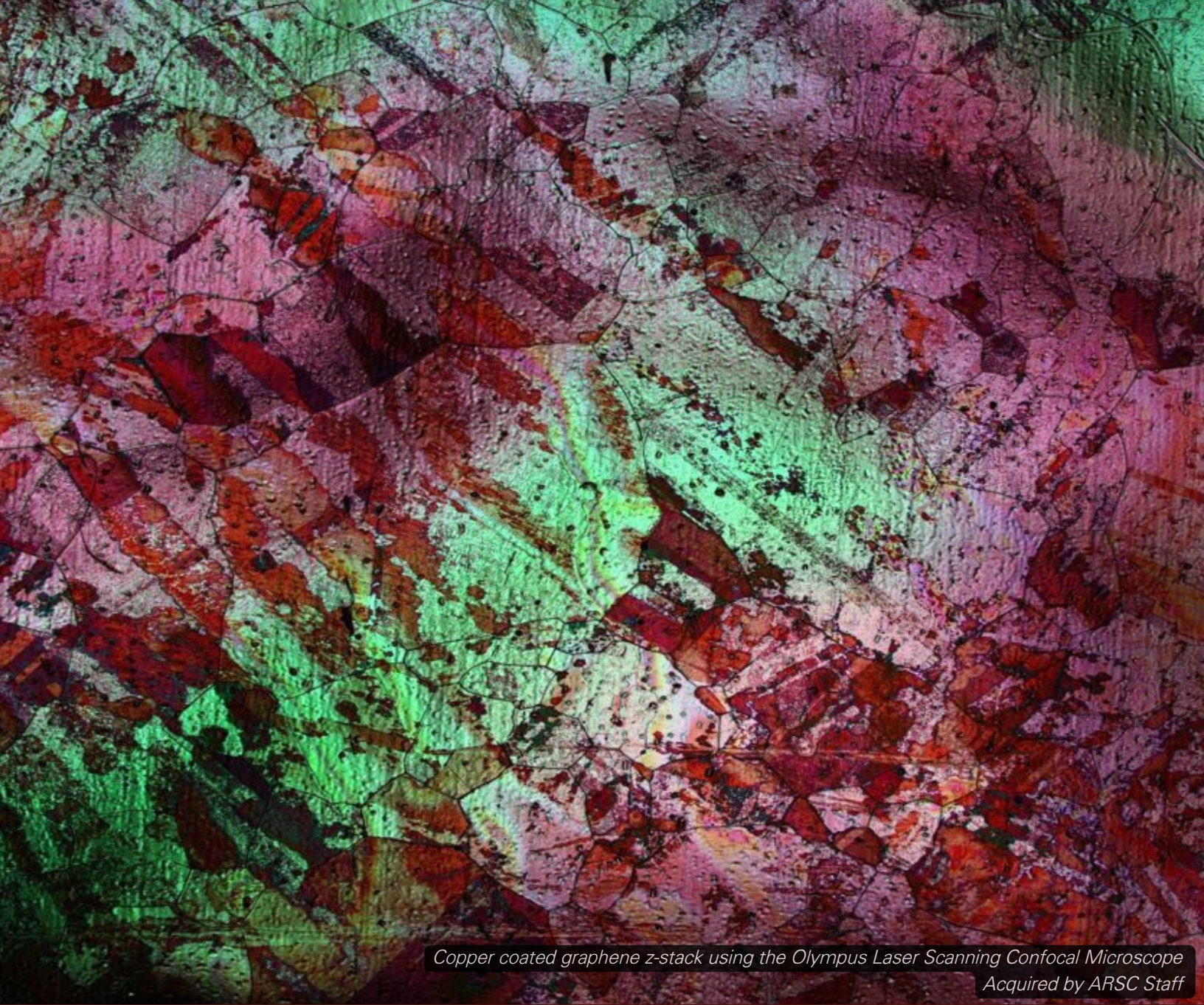
## MSEC Entrepreneurship Bootcamp

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 Cabbage 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*

## Connect with MSEC



<https://www.msec.txst.edu/>



<https://www.linkedin.com/groups/6713617/>



(512) 245 - 1839



Roy F. Mitte 3205  
601 University Drive  
San Marcos, TX 78666



[msec@txstate.edu](mailto:msec@txstate.edu)

**TEXAS STATE**  
MATERIALS SCIENCE,  
ENGINEERING, AND  
COMMERCIALIZATION