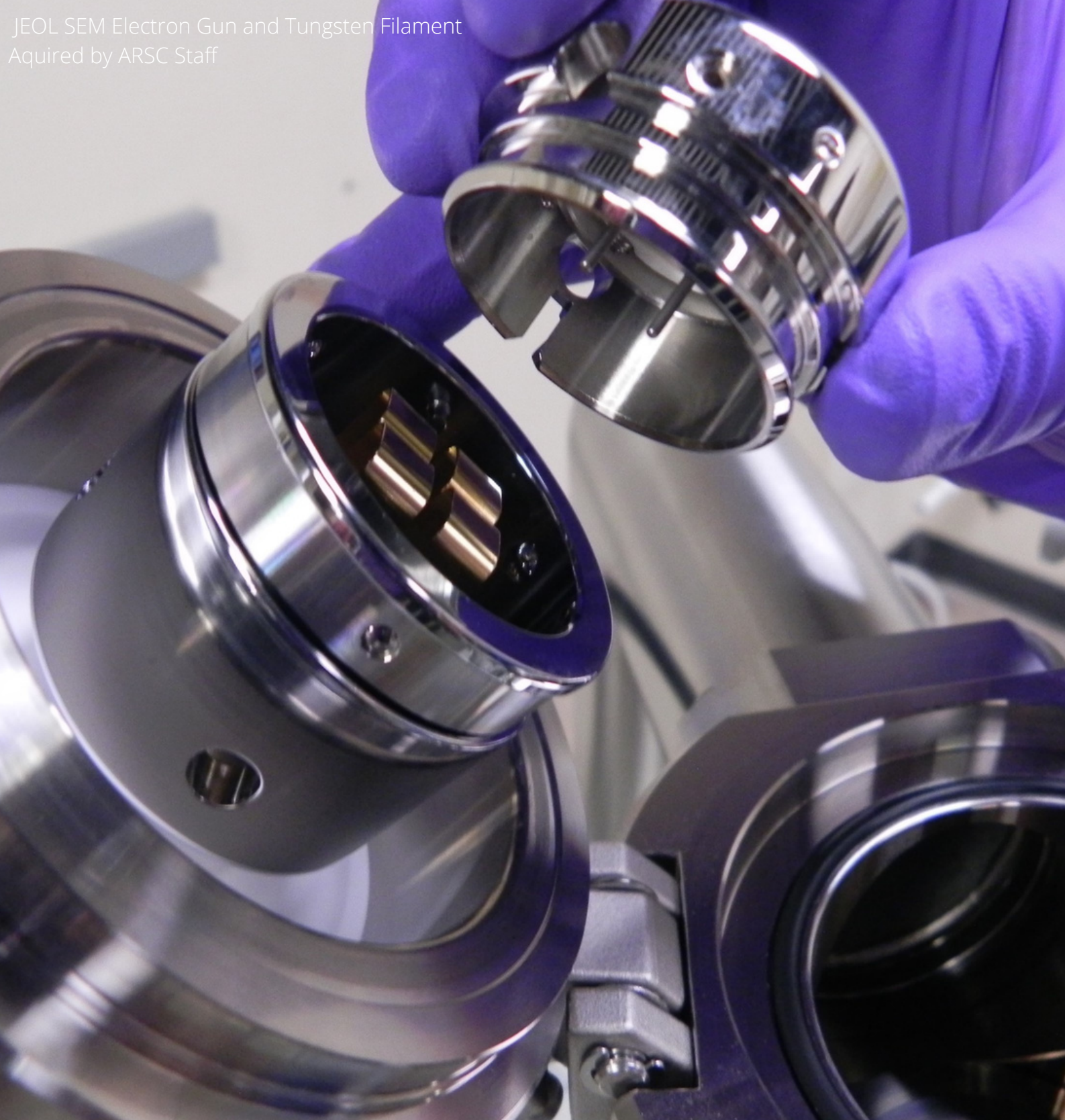


JEOL SEM Electron Gun and Tungsten Filament  
Acquired by ARSC Staff



# MSEC MATTERS



TEXAS STATE UNIVERSITY · ISSUE III · SPRING 2022

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# Letter From the Director - MSEC 10 Year Anniversary



This third issue of our MSEC Matters newsletter is very special, as it corresponds with the MSEC Program's recent 10 year anniversary celebration, held on April 8, 2022. This event was a wonderful opportunity to come together in-person and on-line, and we had a great turn out from students, alumni, faculty, staff, and friends. The afternoon included talks by past directors, current faculty and students, and alumni speakers along with refreshments. Looking back upon the history of the program, Dr. Thomas Myers, founding MSEC Director, presented the vision for the program and recollections of critical steps that led to its launch. Dr. Jennifer Irvin, former MSEC Director and current MSEC Associate Director, and Dr. Edwin Piner, current MSEC faculty member, both described being drawn to Texas State specifically due to the MSEC program and its appreciation for faculty with diverse experiences. Dr. Gary Beall, former MSEC Associate Director and current MSEC faculty member, discussed the impact of the program on research and launch of commercial enterprises. Current students Md Abdul Halim and Isha Desai, and alumni Dr. Tugba Yildiz and Dr. Damilola Runsewe also spoke, describing the impact that MSEC has had on their careers. All of the presentations were very well received, and being able to meet together after the isolation of COVID protocols made the celebration that much better. I had the honor of serving as Master of Ceremony for the event and had the opportunity to express my view of the bright future ahead for MSEC. In closing, I want to express special gratitude to MSEC staff members Karla Pizana and Kelsie Crumpton for their hard work in the planning and execution of our wonderful anniversary celebration.



Sincerely,

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

Dr. Sean Kerwin  
MSEC Director



# In The Spotlight

## Alumni



Dr. Xu Wang graduated in 2021 and is a research scientist at Meta Platforms, Inc. in Seattle WA. During his Ph.D. studies, he did an internship with Biogen, Inc. in Cambridge, MA to develop novel material characterization methods for RNA drugs. With his Ph.D. training on spectrometry and data interpretation, he is conducting research on robust machine learning and quantitation technologies to help secure Meta's data lifecycle efficiently and reliably at scale.

## Faculty

Dr. Yoichi Miyahara, MSEC regular doctoral faculty and assistant professor in the Department of Physics, has received a \$420,000 National Science Foundation grant to develop a new type of scanning probe microscope which can be used for investigating exotic quantum materials as well as enabling the visualization of nanometer scale quantum electronic devices. Once developed, the cutting-edge microscope would be an instrument unique to Texas State and establish the university as one of the leaders in materials science research on quantum science and technology.



## Students



Samuel Kimmel, who is a part of the dual-degree program and simultaneously seeking a Ph.D. in MSEC and an M.B.A. from McCoy College of Business, has been named a recipient of the Future Texas Business Legend Award. The Texas Business Hall of Fame Foundation awards scholar and veteran entrepreneurs from across the state who have demonstrated an early inclination towards business leadership and innovation. This year, after undergoing a rigorous interview process, 44 scholar and veterans were selected to receive a \$15,000 cash prize and a permanent invitation to join the TBHF network. To read more about Samuel's journey visit:

<https://www.mccoy.txstate.edu/news/archive/2022/2022-07-13-sam-kimmel-tbhf.html>.

Kushal Thapa's company, Brekr, was one of 30 selected teams to compete in the TXST New Ventures 2022 competition this past June. Brekr was one of four teams selected from the 30 to deliver their business pitch to a panel of entrepreneurs and investors, and was awarded \$20,000 in the form of a non-dilutive start-up fund. Brekr is a smart electricity monitoring device that uses proprietary machine learning and signal processing techniques to provide the users real-time power usage info of their household appliances. The users can easily and non-invasively install this device in their home's breaker panel, and visualize the wirelessly sent data using accompanying mobile or web app. Their aim is to empower users to take charge of their energy use and save on their electricity bill.



# Student Awards and Fellowships

## **2021-2022 Outstanding MSEC Doctoral Student Award**

- Tanjina Ahmed

## **Spring 2022 Doctoral Research Support Fellowship Recipients**

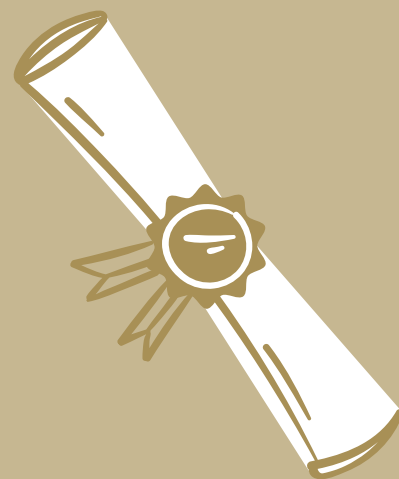
- Tanjina Ahmed
- Isha Desai
- Tuhin Dey
- Anupam K.C.

## **Graduate College Scholarship Recipients 2021-2022**

- Tanjina Ahmed
- Oluwasola Arigbabowo
- James Banks
- Camila Belduque Correa
- Haitao Gong
- Md Abdul Halim
- Chandan Howlader
- Anupam K.C.
- Shamim Reza

## **Gwen S. Durrenberger Endowment Scholarship in Science: Doctoral Level**

- Farah Najdawi



## *News from the MSEC Student Club*



(Pictured from left to right: Tijani Mohammed, Treasurer; Dipa Devkota, Secretary; Mauricio Jemal, Vice President; and Md Abdul Halim, President)

**The MSEC Student Club is committed to providing career development opportunities as well as facilitating events where members can get to know each other outside of the academic setting.**

**We launched the semester with a kick-off party, allowing members to network and enjoy themselves while we discussed our plans for the semester. We also hosted a cultural potluck where our members socialized with each other and with MSEC faculty, while sharing delicious foods inspired by the diverse backgrounds of our members. We are excited to announce that we have successfully established a university chapter of the Materials Research Society. Members of the MRS will now be able to receive financial support and benefit from networking opportunities offered by the MRS. If you are interested in MRS membership, please contact Halim at [m\\_h745@txstate.edu](mailto:m_h745@txstate.edu) for additional information.**

**We invite all MSEC students to join our growing organization in this upcoming semester. The next nomination round for new officers will be conducted within the first two weeks of the fall 2022 semester. If you are interested in joining the MSEC student club or running for office, please contact Mauricio Jemal at [maujemal@txstate.edu](mailto:maujemal@txstate.edu) for more information.**



# 2021-2022 Student Publications

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- Arigbabowo, O. K.**, & Tate, J. S. (2021). Additive manufacturing of polyamide nanocomposites for electrostatic charge dissipation applications. *Materials Science & Engineering B*, 271. <https://doi.org/10.1016/j.mseb.2021.115251>
- Danish, A.**, Mosaberpanah, M. A., Tuladhar, R., Salim, M. U., Yaqub, M. A., & Ahmad, N. (2022). Effect of cenospheres on the engineering properties of lightweight cementitious composites: A comprehensive review. *JOURNAL OF BUILDING ENGINEERING*, 49, 104016. <https://doi.org/10.1016/j.jobe.2022.104016>
- Fatema Zohra**, Muzaffer Akanda, & Bahram Asiabanpour. (2021). The Effect of Macroscopic and Microscopic Patterns of Stainless Steel Surface on the Efficiency of Dropwise Condensation and Precipitation. *International Journal of Engineering Materials and Manufacture*, 6(3). <https://doi.org/10.26776/ijemm.06.03.2021.07>
- Ghilu, S.**, Morton, C. L., Vaseva, A. V., Zheng, S., Kurmasheva, R. T., & Houghton, P. J. (2022). Approaches to identifying drug resistance mechanisms to clinically relevant treatments in childhood rhabdomyosarcoma. *Cancer Drug Resistance (Alhambra, Calif.)*, 5, 80–89. <https://doi.org/10.20517/cdr.2021.112>
- Hemmati, N.**, Kim, H., Mazumder, M., Lee, S.-J., & Lee, M.-S. (2021). Laboratory Assessment of Asphalt Binders Containing Petroleum Resin. *International Journal of Pavement Research and Technology*, 1–10. <https://doi.org/10.1007/s42947-021-00060-y>
- Hemmati, N.**, Yun, J., Mazumder, M., Lee, M.-S., & Lee, S.-J. (2021). Laboratory Characterization of Asphalt Binders Modified with Styrene Butadiene Rubber (SBR). *MATERIALS*, 14(24), 7666. <https://doi.org/10.3390/ma14247666>
- Henderson, L., Zamora, S., **Ahmed, T. N., Belduque, C.**, Tate, J., Yihong Chen, M., & Geerts, W. J. (2021). Altering magnetic properties of iron filament PLA using magnetic field assisted additive manufacturing (MFAAM). *Journal of Magnetism and Magnetic Materials*, 538. <https://doi.org/10.1016/j.jmmm.2021.168320>
- Jha, S., Hasan, M., **Khakurel, N.**, Ryan, C. A., McMullen, R., Mishra, A., Malko, A. V., Zakhidov, A. A., & Slinker, J. D. (2022). Electrochemical characterization of halide perovskites: Stability & doping. *Materials Today Advances*, 13. <https://doi.org/10.1016/j.mtadv.2022.100213>
- Mia, M. D., **Samuels, B. C., Talukder, M. A. A.**, Borges, P. D., Scolfaro, L., Geerts, W. J., & Droopad, R. (2021). Theoretical and experimental study of  $(\text{Ga}_{1-x}\text{Fex})_2\text{O}_3$  ternary alloys. *Journal of Crystal Growth*, 575. <https://doi.org/10.1016/j.jcrysgro.2021.126353>
- Mia, M. D., **Samuels, B. C.**, Borges, P. D., Scolfaro, L., Siddique, A., Saha, J. K., Talukder, A. A., & Droopad, R. (2022). Growth and characterization of  $(\text{Ga}_{1-x}\text{Gdx})_2\text{O}_3$  by pulsed laser deposition for wide bandgap applications. *Applied Physics A: Materials Science & Processing*, 128(5), 1–12. <https://doi.org/10.1007/s00339-022-05476-2>
- Najdawi, F.Z.** and Neptune, K.T. (2022) Optimizing Reverse Osmosis Membrane Parameters through the Use of the Solution-Diffusion Model: A Review. *Engineering*, 14, 9-32. <https://doi.org/10.4236/eng.2022.141002>
- Okechi, I. K.**, Aguayo, F., Torres, A. (2022). Coefficient of Thermal Expansion of Concrete Produced with Recycled Concrete Aggregates. *Journal of Civil Engineering and Construction*, 11(2), 65–74. <https://doi.org/10.32732/jcec.2022.11.2.65>
- Tao, J., Gong, H.**, Wang, F., Luo, X., Qiu, X., & Liu, J. (2022). Deep learning based automated segmentation of air-void system in hardened concrete surface using three dimensional reconstructed images. *Construction and Building Materials*, 324. <https://doi.org/10.1016/j.conbuildmat.2022.126717>

# Powerful and Magnetic Success at the 2022 Entrepreneur Bootcamp II

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Top student ideas won \$1,000 in prizes at the 2022 Spring Bootcamp focused on Technology Commercialization for Ph.D. students studying Materials Science (MSEC) and Computer Science. The event started with a speaker series on how to present innovation ideas led by Mr. Mark Paz II, M.A., Senior Lecturer in the Department of Communication Studies. The series continued with presentations on what investors want to see from professional investors Dr. Craig Cummings of Moonshots Capital and Mr. Russell Hinds of RSH Ventures LLC in Austin. Students then took this new knowledge along with two semesters of Technology Commercialization courses to the test and competed in two rounds of competition for the best, most fundable idea.

The first round was judged by faculty from McCoy Management Department as well as Entrepreneurs in Residence at the Texas State Center for Innovation and Entrepreneurship. Ideas such as a power monitor in a breaker box and inexpensive 3d printable magnets were edged out by the top four ideas. These four students competed in front of a panel of investors including Brad Bentz from ATX Venture Partners, Art Olbert a member of Central Texas Angel Network (CTAN), and entrepreneur Christian Adams of RepairPricer.com. Computer Science student Samantha Aziz took first place for her idea "EyeScreen" which will make screening for Autism Spectrum Disorder (ASD) a matter of hours instead of months. Runners up were Maria Tomasso and Nick Ni from Computer Science as well as Samson Ghilu from MSEC. All the students gained valuable experience pitching their ideas in a real-life scenario and were encouraged to compete in the New Ventures Competition which was held in June.

Written by: Harlan Titus Beverly, Ph.D., Lecturer for MSEC and  
Department of Management

# Welcome New MSEC Graduate Faculty!

## Dr. David Schilter

Associate Faculty, MSEC

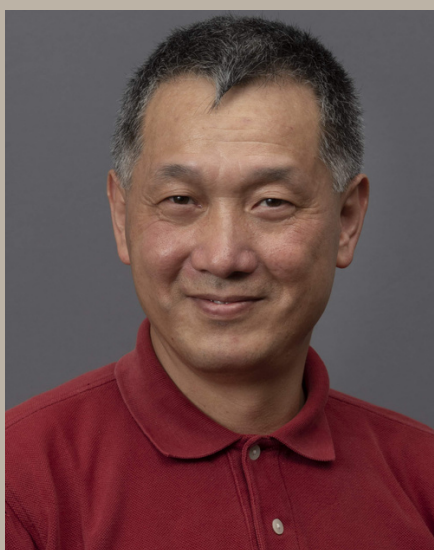
Assistant Professor,  
Chemistry and Biochemistry

Ph.D. in Chemistry, The University of Sydney



# Congratulations!

*MSEC Faculty Receiving Tenure and Promotion*



## Dr. Feng Wang

Ingram School of Engineering  
Associate Professor to  
Professor



## Dr. Cynthia Luxford

Chemistry and Biochemistry  
Assistant Professor to Associate  
Professor



# Congratulations

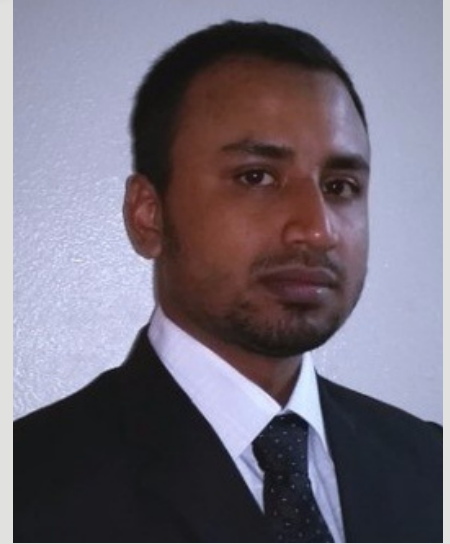
## Advanced to Candidacy



Samuel Kimmel



Brian Samuels



Md Abdul Ahad Talukder

## Spring 2022 Graduates



(Pictured from left to right: Dr. Edwin Piner, Dr. Anupam K.C., Dr. Bahram Asiabanpour, Dr. Zaid Almusaied, Dr. Sean Kerwin, Dr. Mahmuda Monne, Dr. Mark Wistey, and Dr. Mohammad Shamim Reza)

- Dr. Anupam K.C.  
Advisors: Dr. Edwin Piner and Dr. Mark Holtz
- Dr. Zaid Almusaied  
Advisor: Dr. Bahram Asiabanpour
- Dr. Mahmuda Monne  
Advisor: Dr. Maggie Chen
- Dr. Mohammad Shamim Reza  
Advisor: Dr. Mark Wistey





## Connect with MSEC



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



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



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**TEXAS STATE**  
MATERIALS SCIENCE,  
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COMMERCIALIZATION