Happy Thanksgiving!

In the spirit of the holiday, we have a lot for you to "gobble up!":-) In this issue we announce the 2023 calendar image winners (prepare to be dazzled) and share some cool MSE lab research videos, along with other interesting tidbits of news and announcements. So, happy reading/viewing and safe travels if you are leaving campus for the holiday.

The next issue of TeamMSE will be published Monday, Dec. 5. If you have anything you'd like to submit, please send it to Kristen Freshley at krisfres@umich.edu by Sunday, Dec. 4.

Upcoming Events

Seminar speaker on Dec. 2: MSU's Kris Chan

Christina Chan of Michigan State will present *"Role of microenvironment on mediating diseases, through DNA repair and lipid alterations"* **Friday, December 2 at 10:15 a.m.** in 1670 Beyster.

Zoom: https://umich.zoom.us/j/98899169074

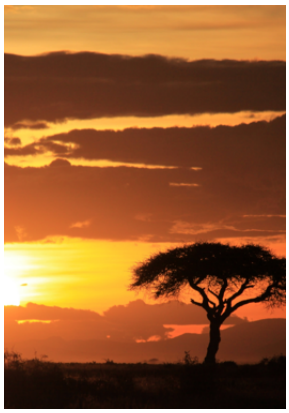
Passcode: mse890

RSVP for MSE Holiday Party by Friday, Dec. 2

Please join us Thursday, December 8 from 5:30-7:30 at the Michigan League -- Hussey and Vandenberg Rooms -- for a catered dinner, karaoke, fellowship and fun. [Click the hyperlink above to add the event to your calendar]. All MSE faculty, staff, students, and families are welcome and encouraged to join.

Please RSVP here by Friday, December 2nd.

Applications open for African Materials Institute



MSE PhD students: The Joint Undertaking for an African Materials Institute (JUAMI) will take place in Nairobi, Kenya next summer. JUAMI facilitates African and U.S. collaborations through a two-week institute with seminars, tutorials and hands-on lab sessions focused on materials for energy and sustainability. For more info on how to apply, click **here**. Brian Iezzi, a past JUAMI participant, is happy to answer questions: bciezzi@umich.edu. U-M has been represented at every institute since 2012, so please consider! Applications are due Jan. 15.

Events Recap

Snapshots from recent events

Jesse Hu (second from left) gives a demonstration during a Blacksmithing Club session in the Van Vlack Lab on Nov. 11.

Professor Steve Yalisove (left) was part of a U-M recruiting team that attended the National Society of Black Physicists (NSBP) Conference last week in Charlottesville, Va.

Research highlights

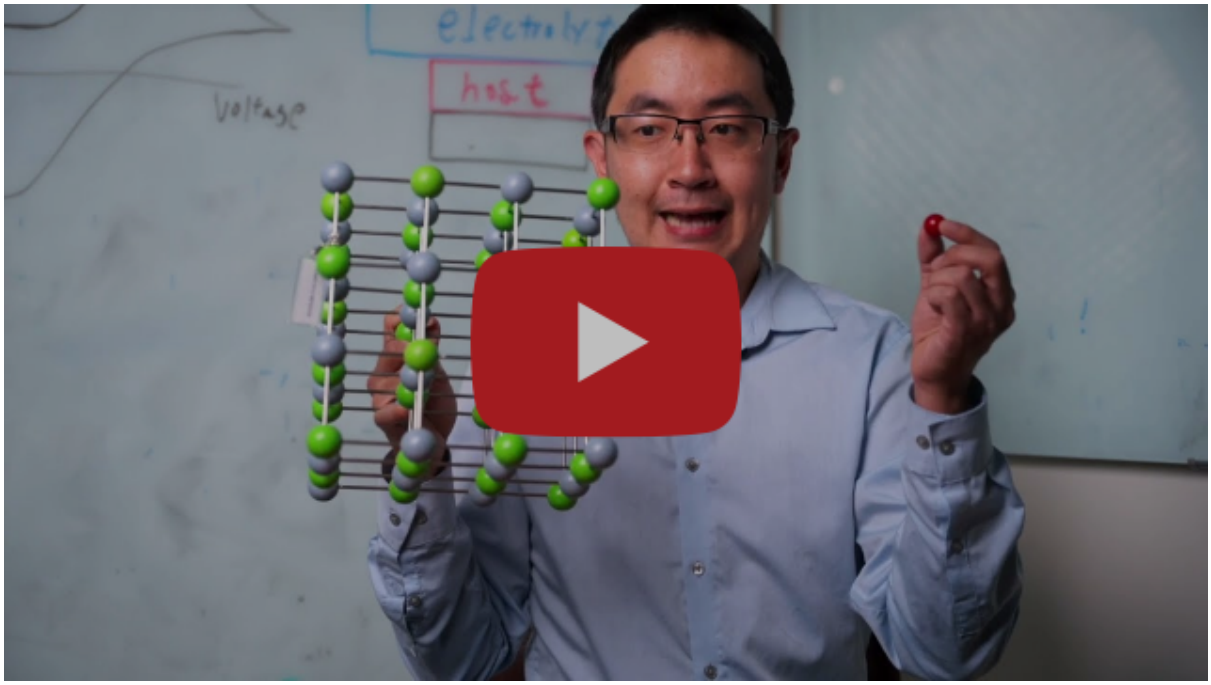
"A Look at MSE Labs" video series

We are excited to announce the first installment of a new MSE video series: "A Look at MSE Labs," created and filmed by Professor Steve Yalisove, that takes an in-depth look at the amazing materials research being conducted in MSE to tackle some of the most challenging issues facing our society.

The Hovden Lab

The Hovden group takes on invisible challenges: seeing things at the nano and atomic scale level to tackle some of society's biggest issues, including clean energy.

The Li Lab



The Li group researches materials for two of today's most important technologies: microelectronics, which yielded the modern computing revolution, and the lithium-ion battery, a critical technology for our transition to a clean energy future. The Li group is particularly interested in exploring the boundaries of these technologies and applying concepts from one field to the other.

The Loebel Lab

A unique and collaborative lab, the Loebel group is excited about biomaterials, in particular biomaterials for regenerative medicine applications.

The Pena-Francesch Lab

The Pena-Francesch group looks at organisms in nature that have developed amazing

materials in order to survive in extreme environments, analyzes them at the molecular level, and applies the concepts to synthetic materials design.

The Sun Lab

The Sun group is interested in resolving outstanding fundamental scientific problems that impede the computational materials design process. The group uses high-throughput density functional theory, applied thermodynamics, and materials informatics to deepen our fundamental understanding of synthesis-structure-property relationships, while exploring new chemical spaces for functional technological materials. These research interests are driven by the practical goal of the U.S. Materials Genome Initiative to accelerate materials discovery, but whose resolution requires basic fundamental research in synthesis science, inorganic chemistry, and materials thermodynamics.

Faculty News

Pena-Francesch video wins new MRS "Sustainability in Action" contest

The Materials Research Society (MRS) has selected a video by Assistant Professor Abdon Pena-Francesch as the inaugural winner of its new video competition, "Sustainability in Action." The video, which highlights the senior capstone design course, MSE 481, will be featured at the upcoming MRS Fall Meeting taking place next week in Boston, Nov. 27-Dec. 2. Congratulations to Abdon and team! To view the video, click on the photo above.

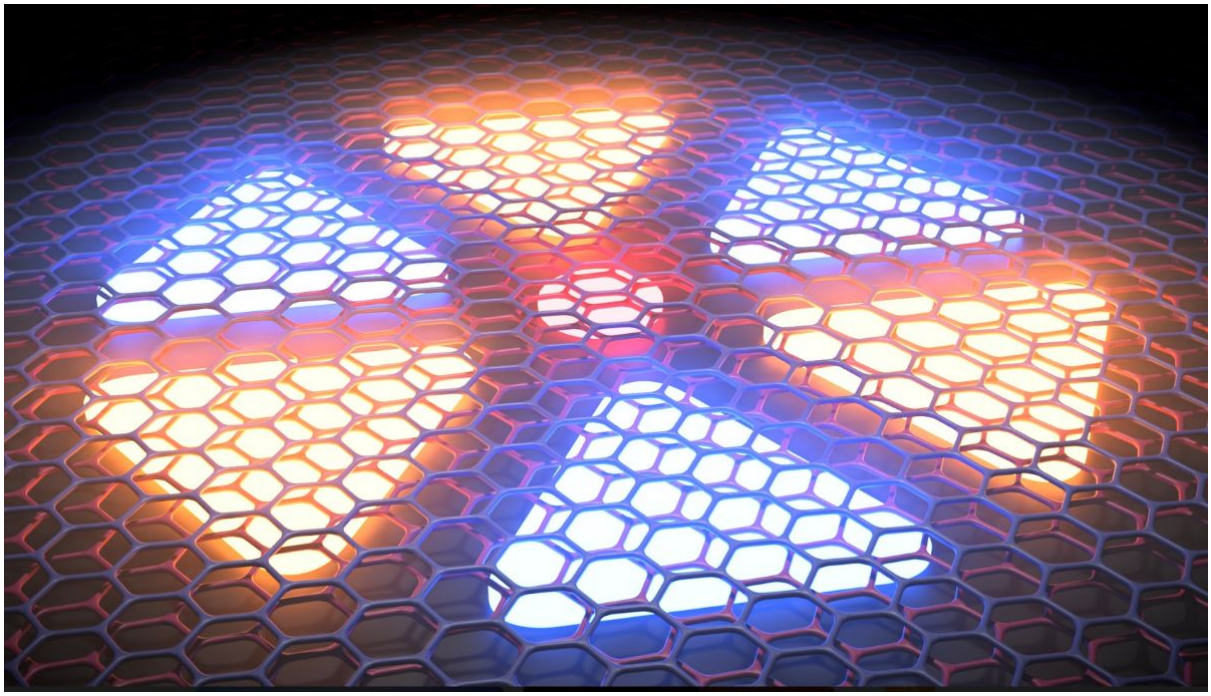
Student News

CONGRATULATIONS to our 2023 calendar image winners!

First, a HUGE thank you to everyone who submitted images this year. We had a total of 30 images submitted by 14 people, and - wow! - the caliber of entries this year was exceptional, which made the selection process very difficult. We are excited to present the 2023 image contest winners:

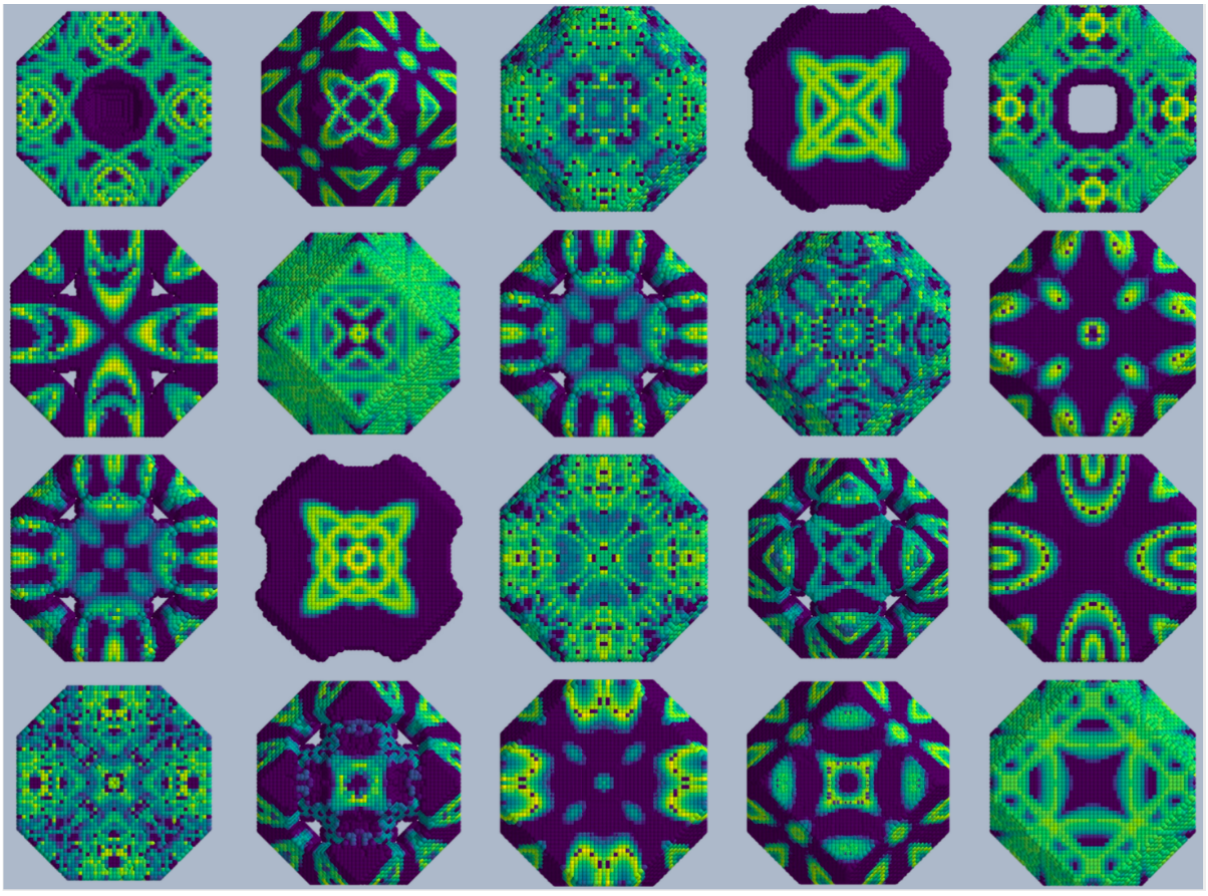
Cover: "Launch Pads" by Suk Hyun Sung (Hovden group)

Artistic representation of periodic restructuring in twisted bilayer graphene systems



"Zejii tiles" by Kyle Bushick (Kioupakis group)

Auger-Meitner recombination is a non-radiative recombination process important in semiconductors. Using first-principles calculations, we show the distribution of participating quasiparticles (electrons, holes, phonons) in the system. These "tiles" are cross sections from our calculations in silicon and reveal the electronic and vibrational structure of the recombination process.

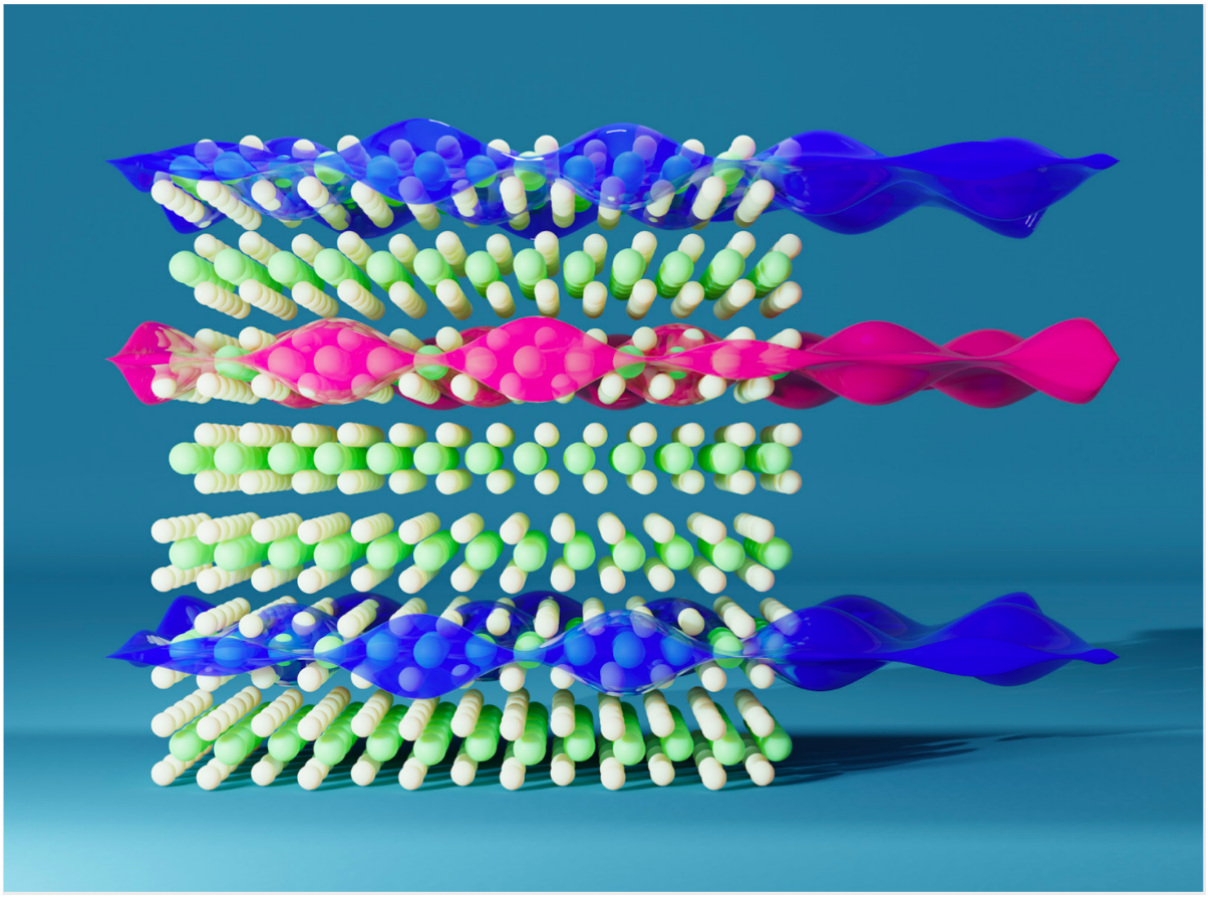


"Finding love in lithium" by Catherine Haslam (Sakamoto group)

Fracture surface of Li

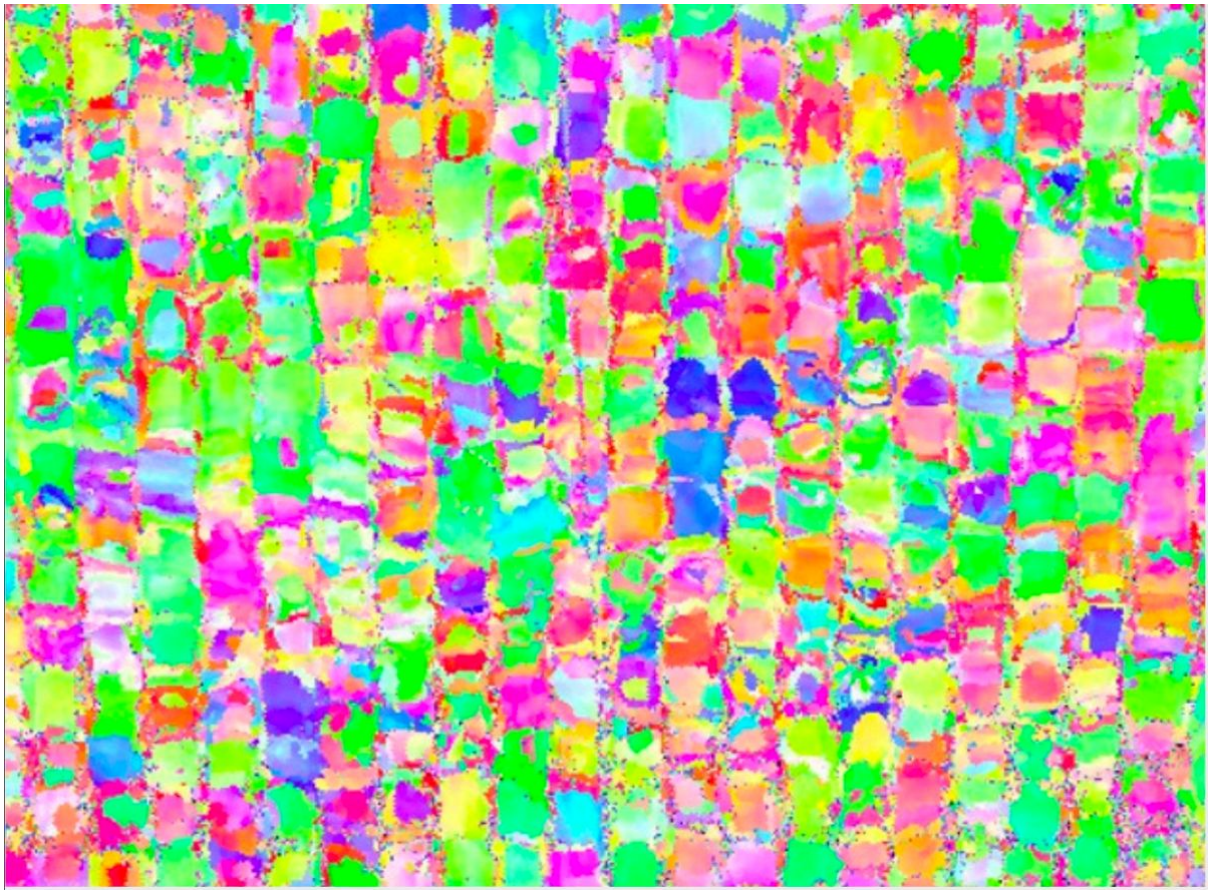
"Skyscraper" by Suk Hyun Sung (Hovden group)

Artistic representation of an interleaved TaS2 polytype heterostructure



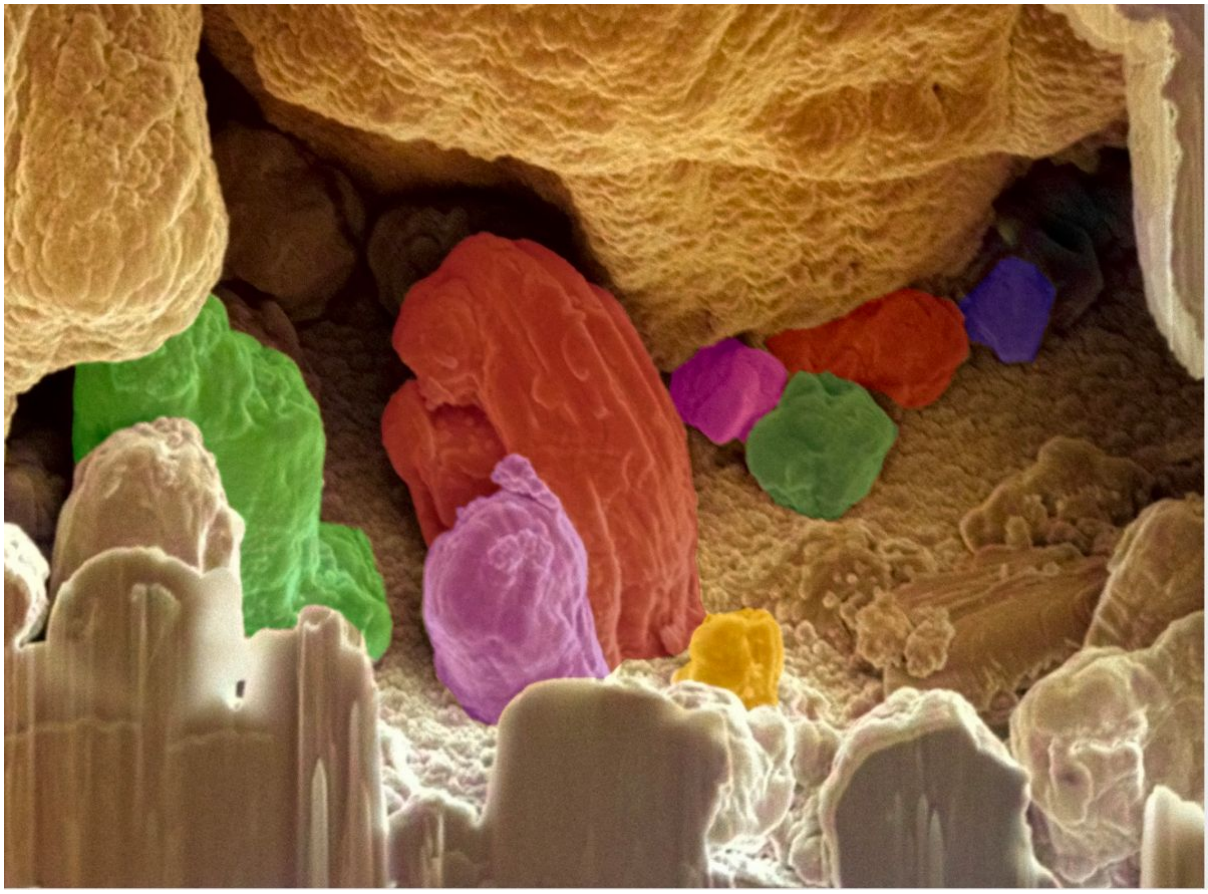
"Grains of Steel" by Mohsen Taheri (Misra group)

Grain Structures in additively manufactured stainless steel



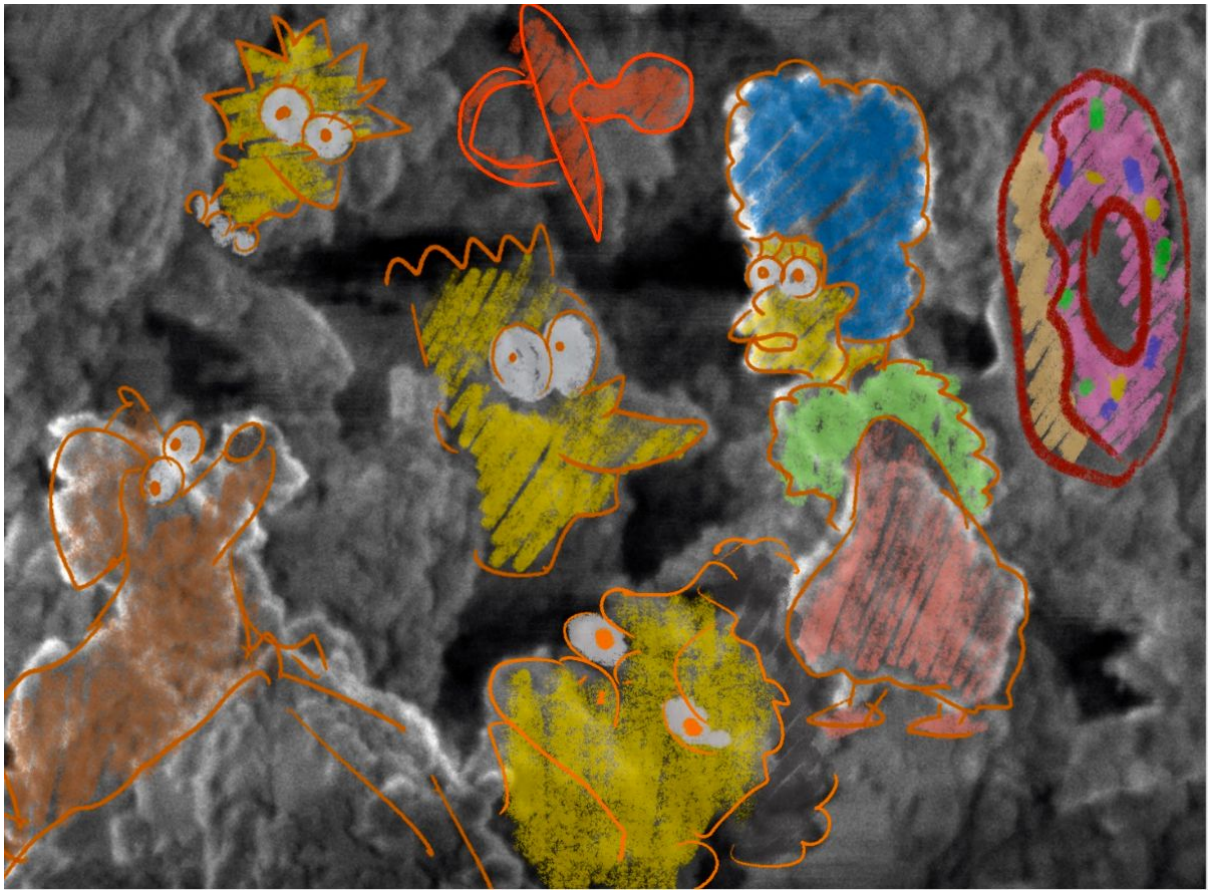
"Jewels in a cave" by Catherine Haslam (Sakamoto group)

Li nucleates inside an anode cross section



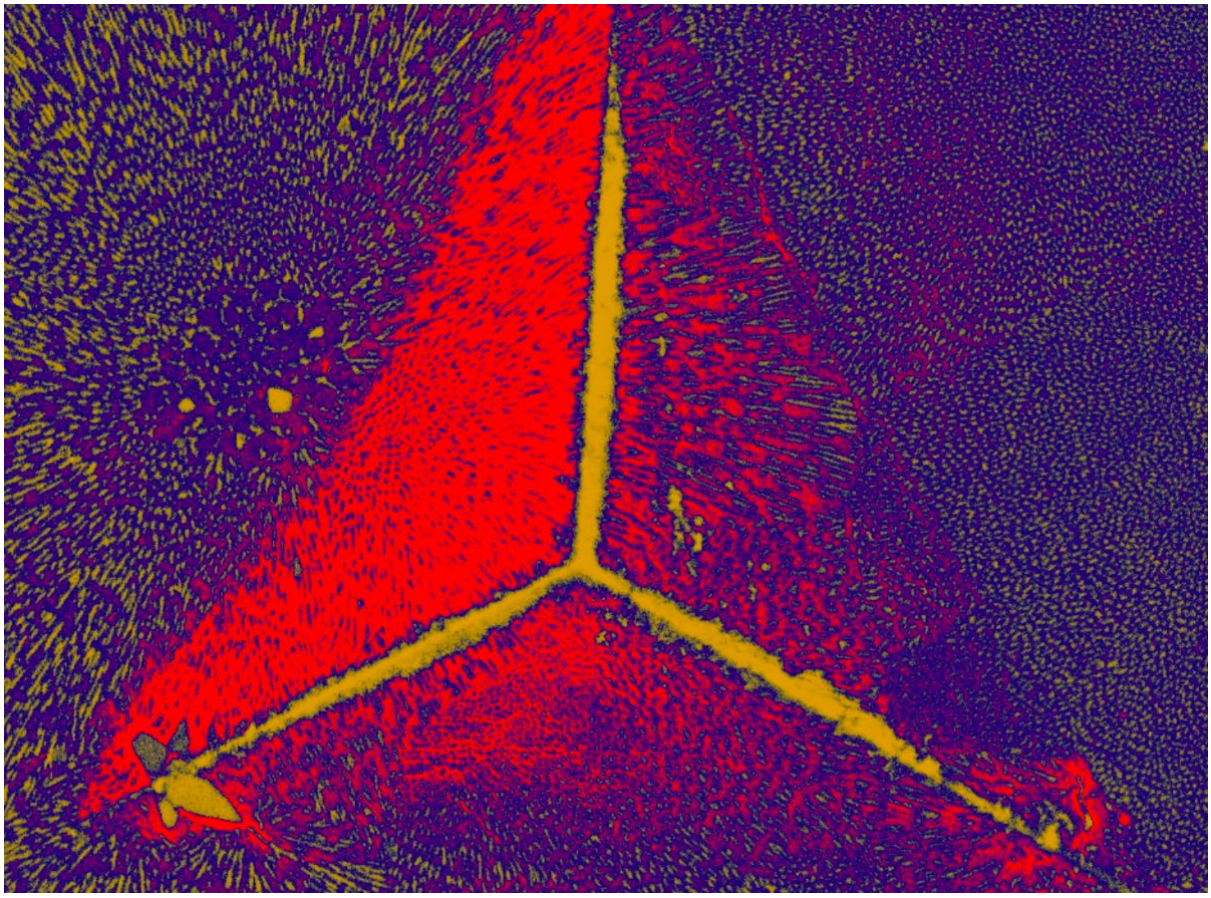
"Zimpson Family" by Yuhan Li (Wang group)

The NaY zeolite-Geopolymer composite ceramic sample build up a home for the Simpson Family.



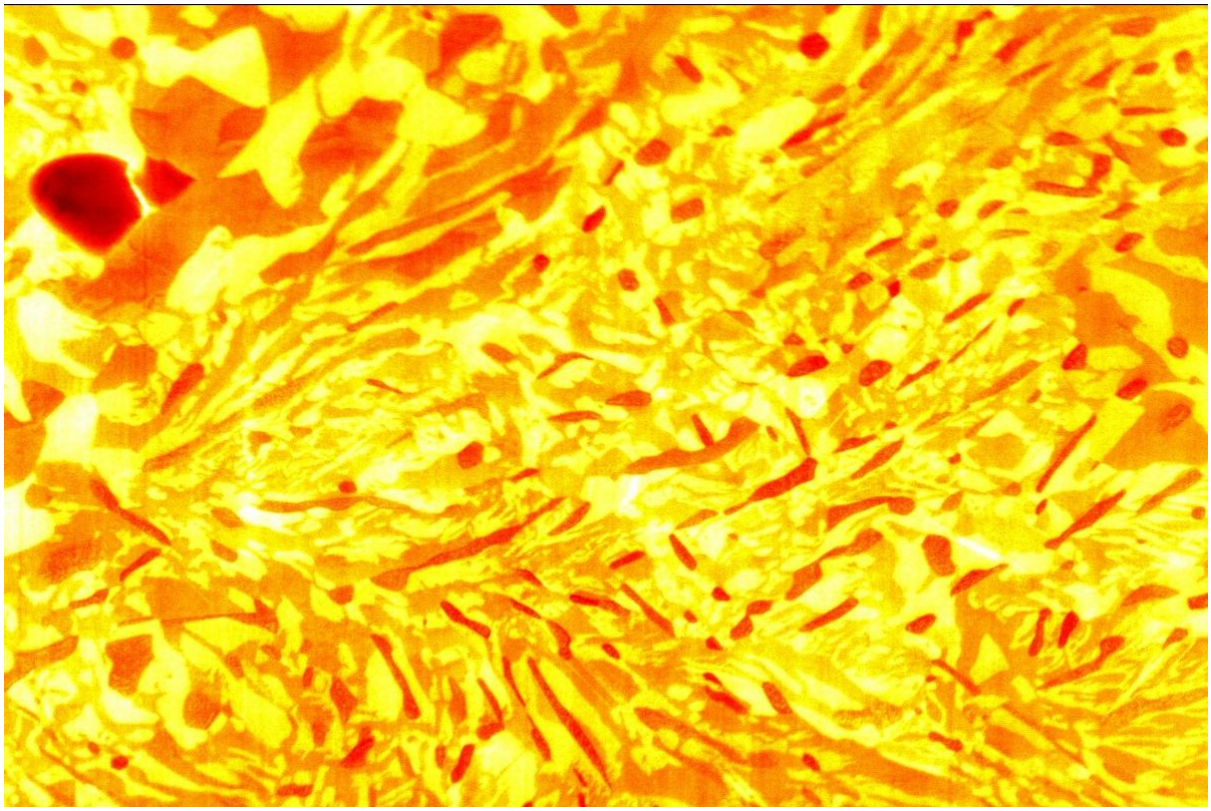
"Nano Shield of the Trinity" by Arkajit Ghosh (Misra group)

Impression of nanoindenter on Al-Si nano-eutectic



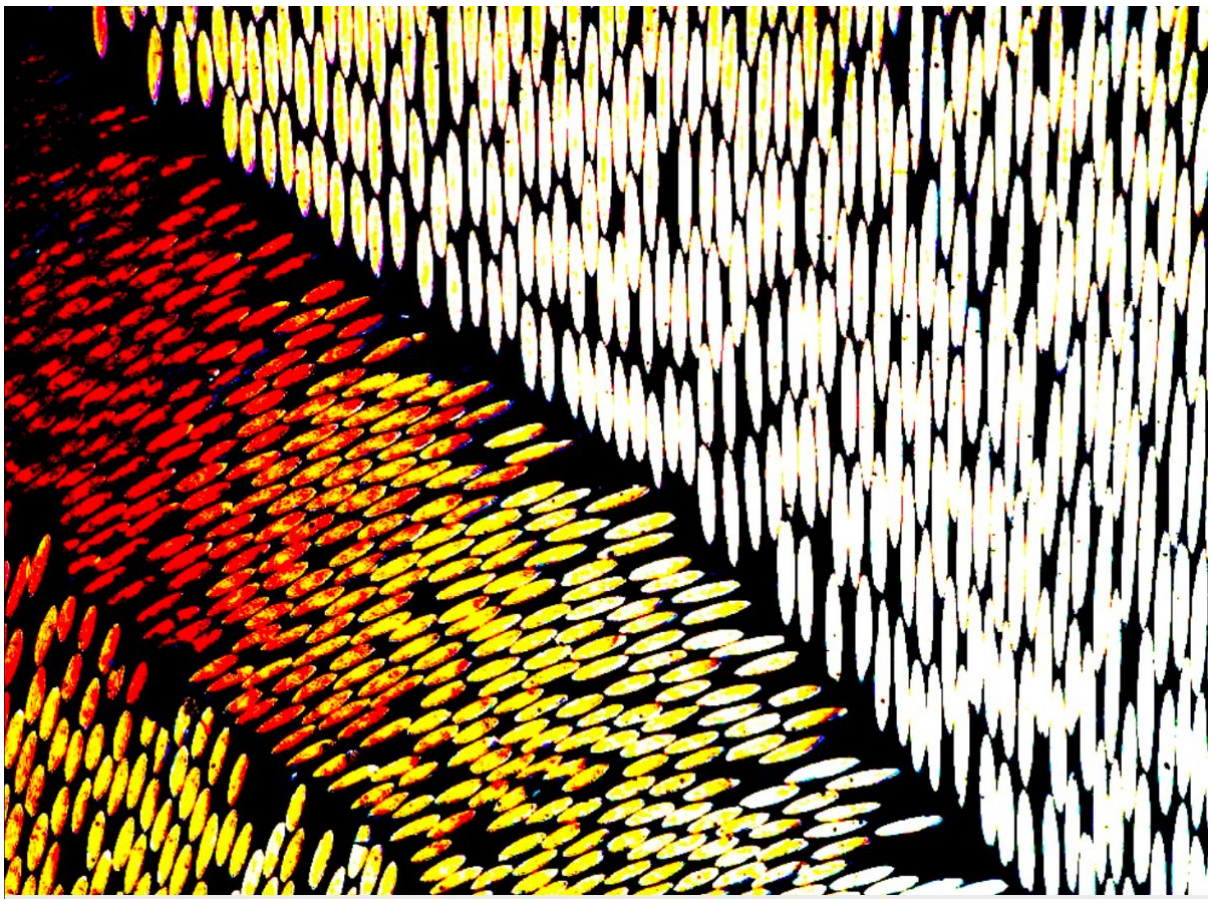
"Thermal imaging of lava dripping from volcano" by Anshul Kamboj (Marquis group)

The image represents SEM cross-section of CrFeNiMn high entropy alloy aged for 9 weeks at 500 C. The three colors represent phase decomposition with Cr-rich phase (in red), Ni-Mn phase (in yellow), and Fe-Cr phase (in orange).



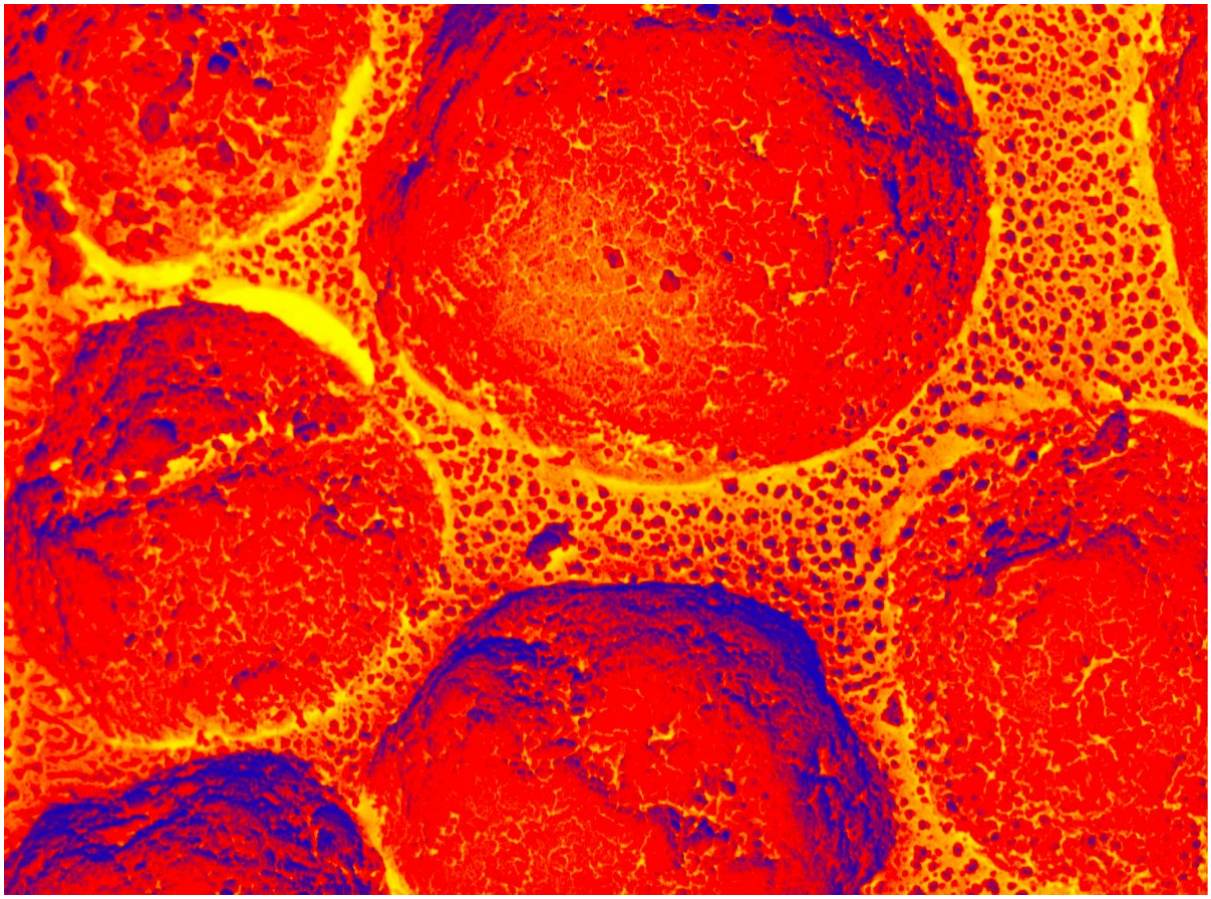
"Psychotropic Composite" by Kameron Betz (MSE 577)

Cross section of a composite hockey stick



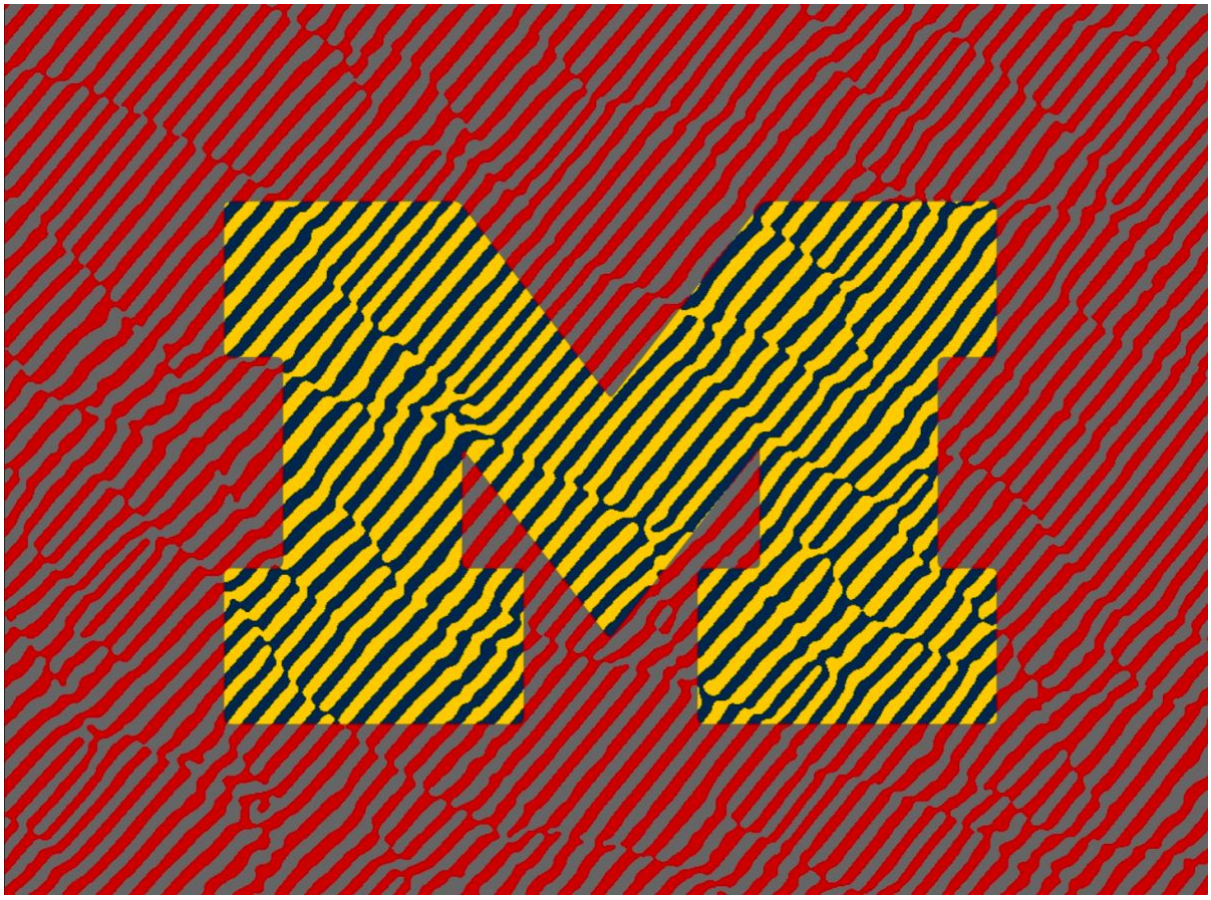
"The Surface of the Sun" by Fan-Wei Wang (Tuteja group)

The SEM image of phase separation polyurethane-alumina nanocomposite



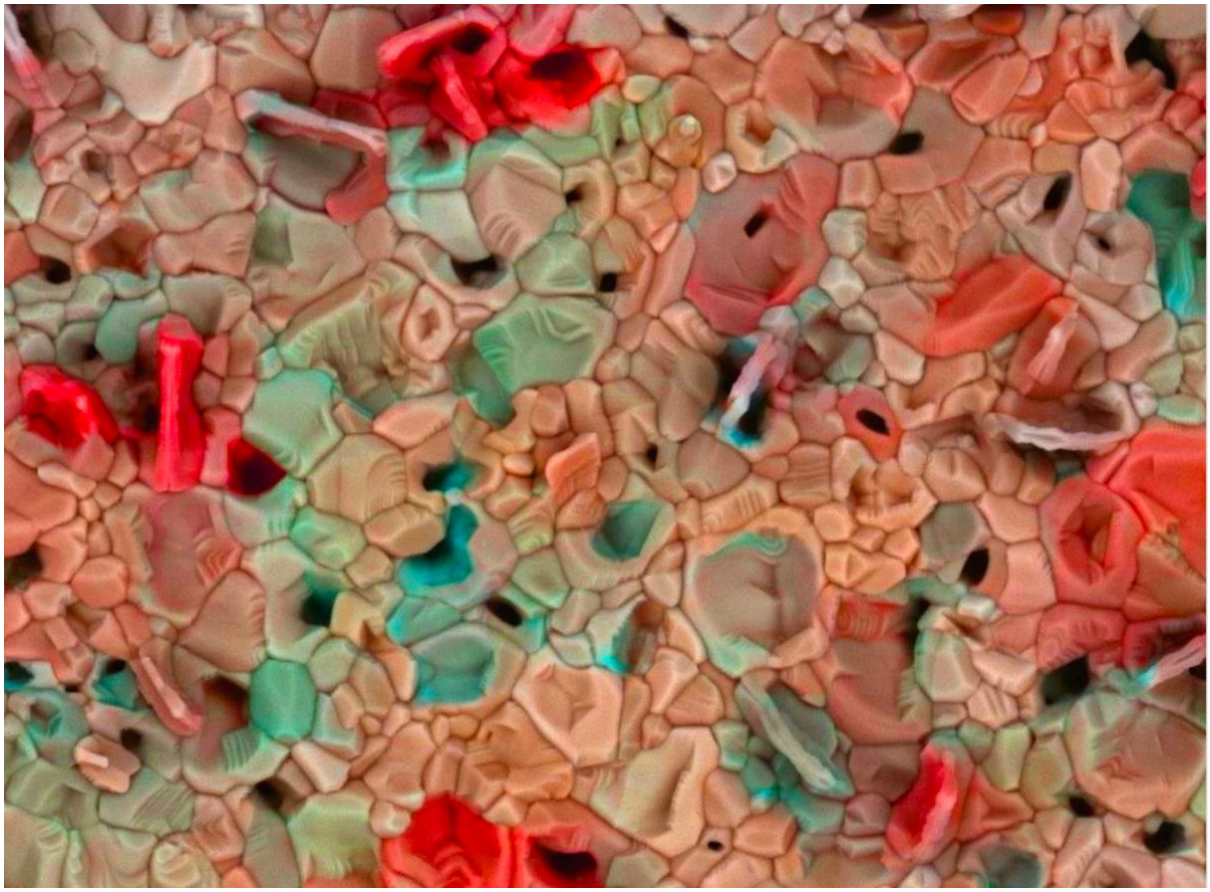
"Rivalry and Competition" by Paul Chao (Shahani group)

Transverse cross section of a directionally solidified Al-Al_2Cu binary eutectic alloy with competing eutectic grains



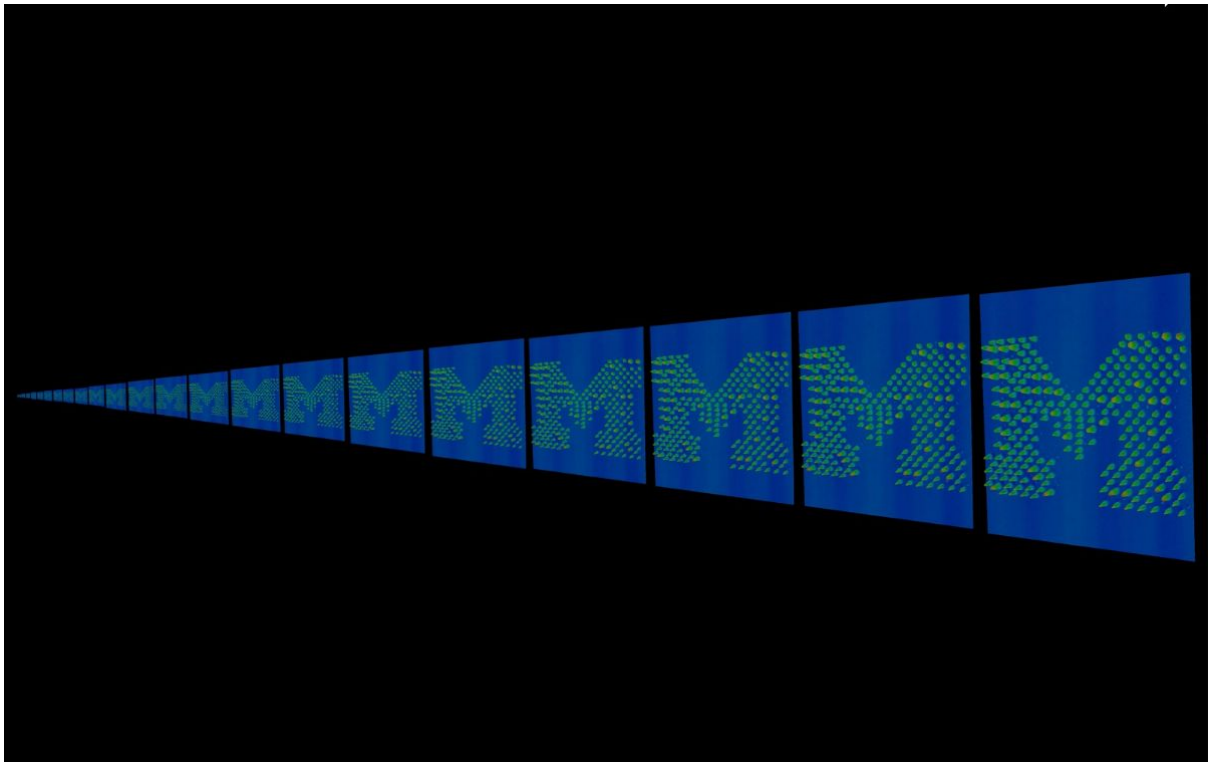
"Coral reef" by Thomas Valenza (Marquis group)

Top surface on oxidized Ti



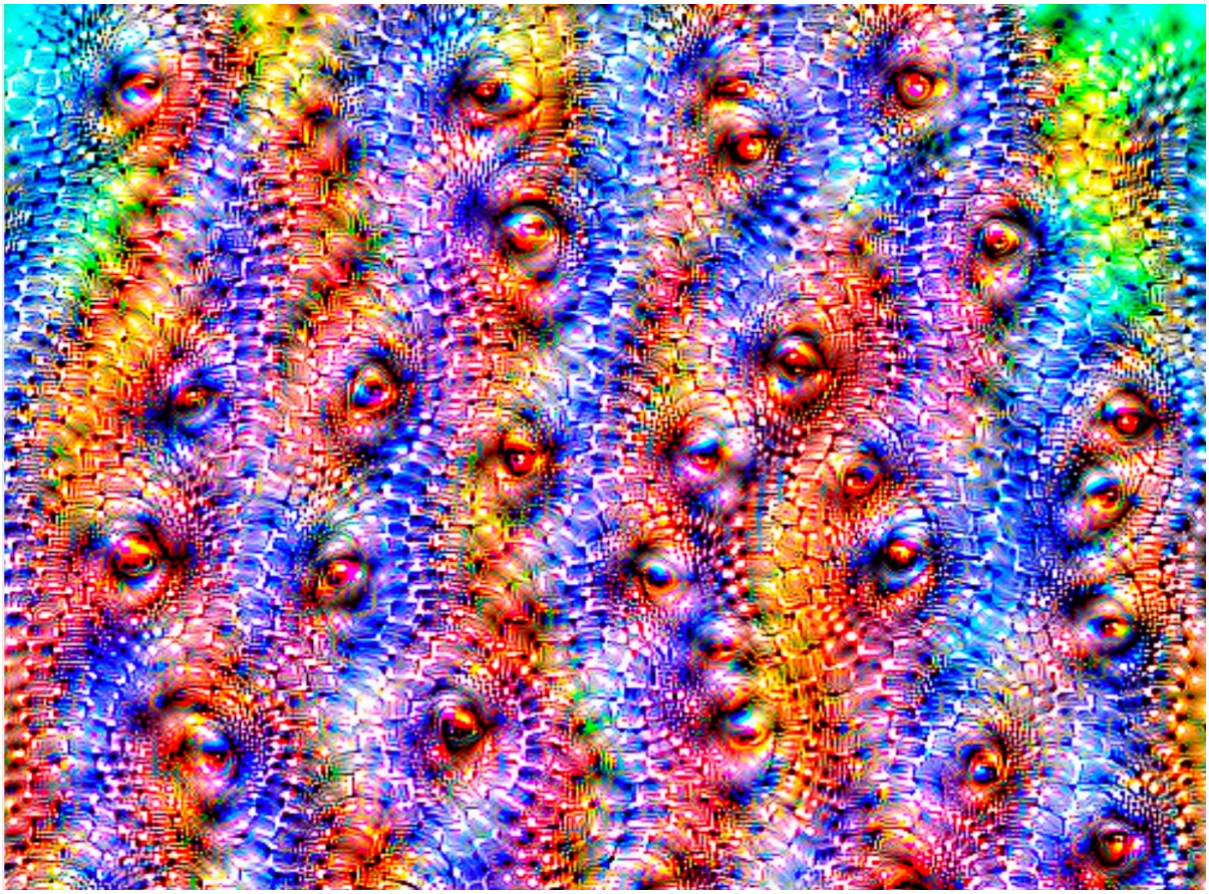
Back cover: "A Michigan Perspective" by Brian Iezzi (Shtein group)

A perspective array of laser scanning microscope scans of electrohydrodynamic-jet printed germanium microarrays for use in photonic applications



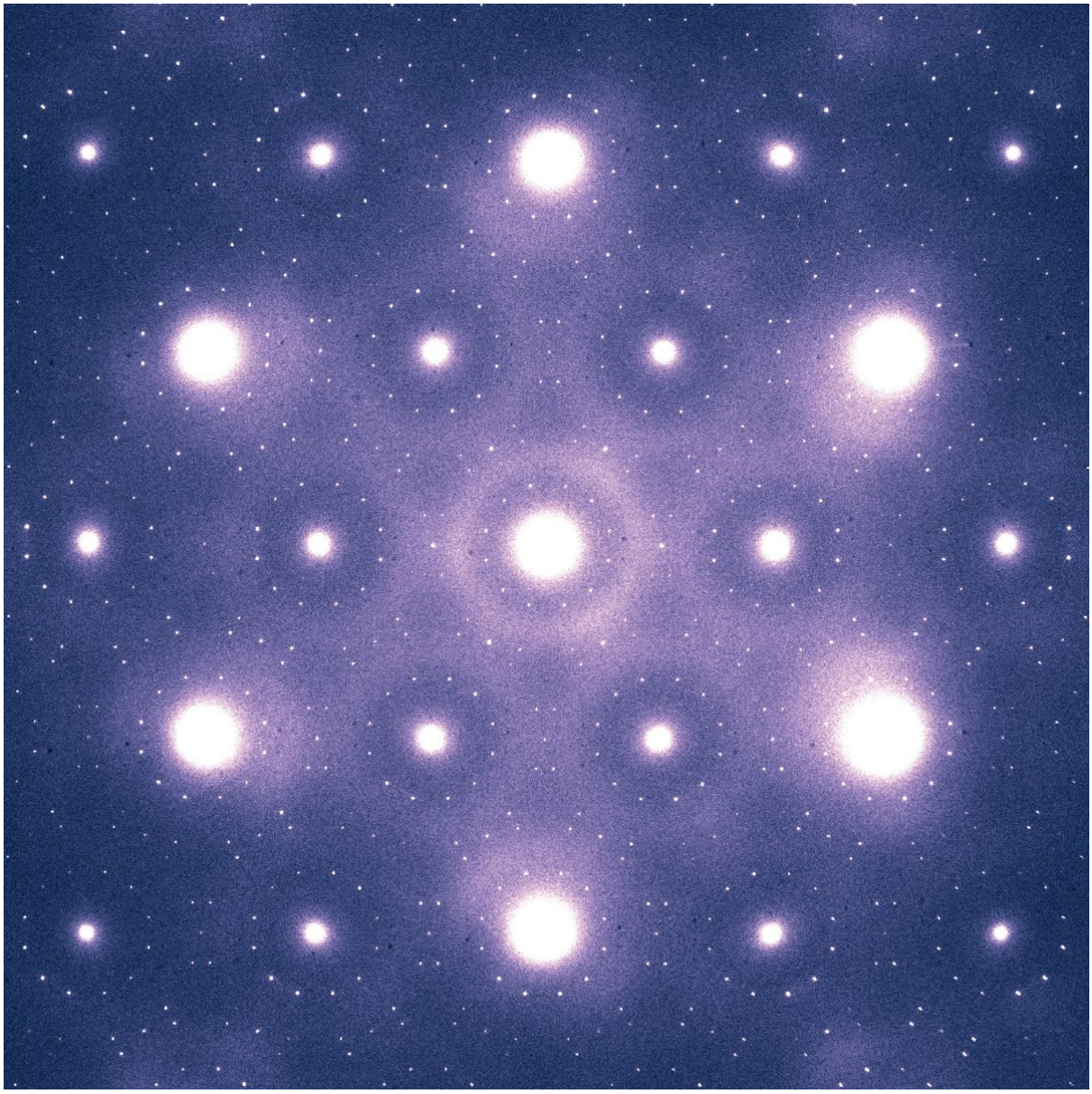
Bonus winner: "Microstructure has eyes" by Kyle Farmer (Holm group)

This is a visualization of a single channel from the VGG16 classification model that is highly activated when an image of ultra high carbon steel microstructure is passed through the model.

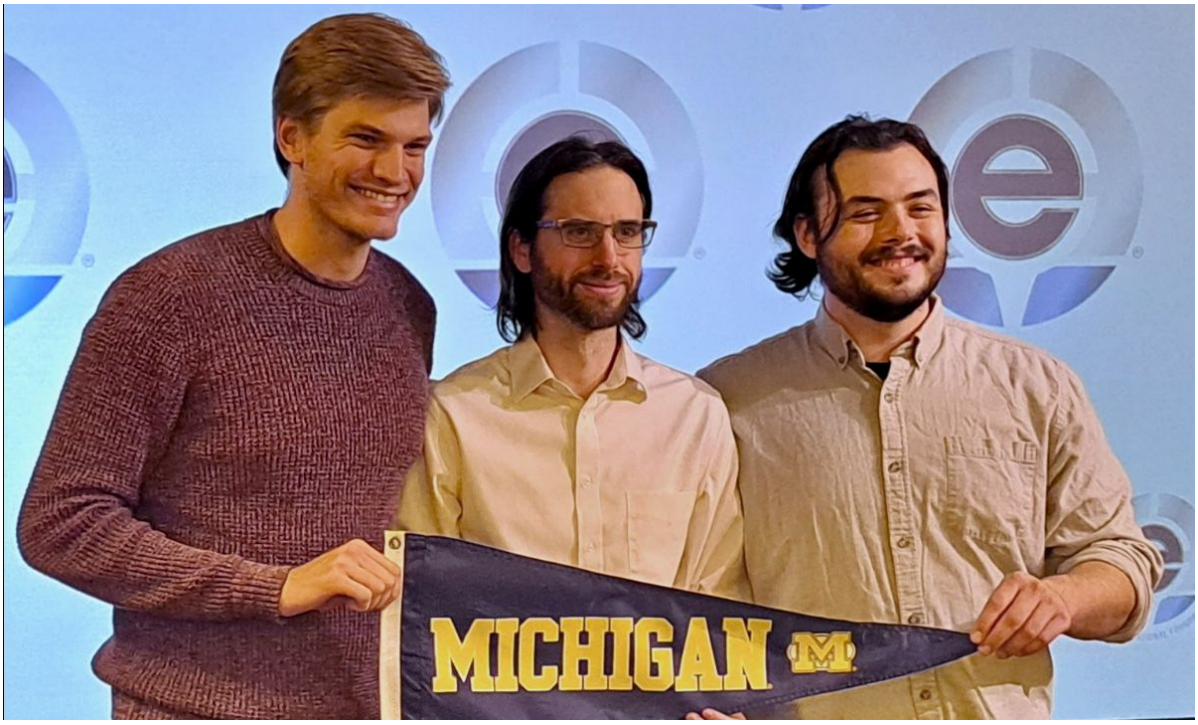


Bonus winner: "Night Sky" by Suk Hyun Sung (Hovden group)

Electron diffraction pattern of TaS2 in twinned commensurate charge density wave phase



MSE attends 75th College Industry Conference in Chicago



Last week, Nov. 17-18, the Foundry Educational Foundation wrapped up its 75th anniversary College Industry Conference in Chicago. One hundred twenty-two students representing 30 FEF schools were in attendance. They were feted by 39 participating companies who came with 200 job openings.

The U-M delegation (above) included Aaron Cooke, FEF Key Professor Tim Chambers, and Elliott Gorishek, who won the George N. Booth Scholarship.

Staff News

Cristian coaches #1 volleyball player in the U.S.

In the fall, when he's not in Dow keeping operating systems running smoothly, IT desktop support specialist Chris Cristian is on the volleyball court at Skyline High School coaching the girls' varsity volleyball team. His team captain this year was Harper Murray, the #1-ranked high school volleyball player in the country and 2022 Michigan Miss Volleyball. Over the course of her four years at Skyline, the 6'2" senior racked up 2,425 kills. Last month she committed to playing volleyball for perennial powerhouse University of Nebraska. Christian commented how he's enjoyed watching his star player develop into a leader the past four years. "To have Miss Volleyball playing and being a part of the Skyline program is something that I feel comes once in a lifetime," he said. "This was a special season for the school, for Harper and her family, and the Skyline volleyball program."

Alumni News

Adams elected president of AVS in 2024

David Adams (PHD '94) was recently named the next president of AVS in 2024. Earlier this fall he was elected an AVS Fellow, Class of 2022, for

"contributions in the field of reactive materials and thin-film technologies, and for sustained commitment and contributions to national and local AV and the field vacuum science."

Adams is a Senior Scientist at Sandia National Labs in Albuquerque, N.M. and was the first PhD student advised by Professor Steve Yalisove.

Job opportunities

Apple hiring Research Center Manager - Alloys/Metals

As a member of the Alloy Engineering team at Apple, you will help create the next generation of the world's finest consumer electronic devices. You will drive the rapid advancement of alloys, coatings, and processes that are the building blocks of our products. This position will interface within Alloy Engineering and directly with other Product Design, Operations, and Industrial Design teams to advance and shape Apple’s advanced materials.

Key qualifications

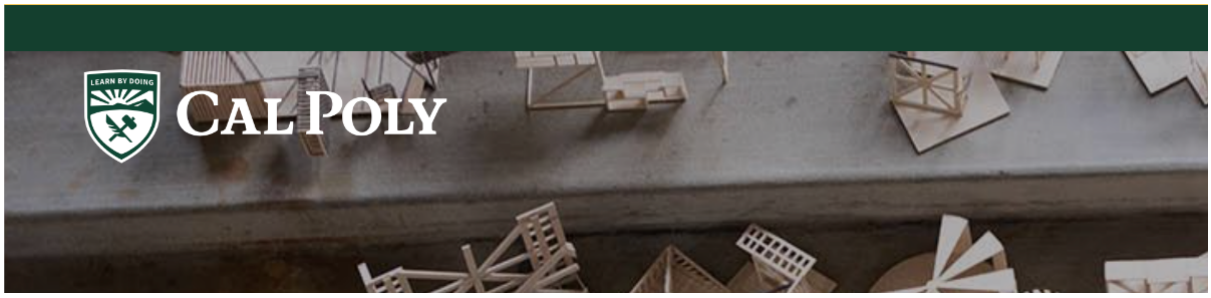
- Experience leading experimentally focused materials science synthesis, testing and characterization projects
- Experience with advanced characterization techniques such as scanning electron microscopy, EBSD, optical microscopy, and x-ray diffraction, to name a few
- Experience managing materials science lab-based teams
- Experience in the physical metallurgy and processing of aluminum alloys, stainless steels, and their surface finishing is highly desirable
- Flexibility and comfort working in a fast-paced environment
- Minimum 5 years of work experience, post graduation

Description
This position within the Alloy Engineering team will lead a materials science and engineering laboratory group focused on materials and coatings development and failure analysis targeted for a range of Apple products. Responsibilities will include managing a team of materials scientists and characterization experts, both helping execute on existing projects while shaping the laboratory's roadmap for next generation materials synthesis, characterization, and testing, including use of automation and materials informatics. The candidate will have experience as an individual contributor and manager in a materials science laboratory environment, applying physical metallurgy principles to materials testing, characterization and failure analysis. An understanding of materials processing and manufacturing is also important for this position. Experience with a variety of ferrous, non-ferrous, and reactive metal alloys to assist materials engineers with laboratory investigations is essential. The successful candidate must posses the ability to manage multiple projects simultaneously with competing priorities.

Education: A minimum of an M.S. in Materials Science, Metallurgy or a related field is required. Ph.D. is preferred.

Apply here.

Cal Poly looking for assistant professor - polymers



The Materials Engineering Department in the College of Engineering at California Polytechnic State University, San Luis Obispo, is seeking an Assistant Professor in Materials Engineering. The faculty position is primarily focused on polymers and the practical application of polymers to industry. The projected start date is September 14, 2023, for the 2023-2024 AY.

Basic qualifications

- Candidates must hold a Ph.D. in Materials Science and Engineering or a related field. The successful candidate will be proficient in teaching basic and advanced polymers courses and involved in scholarly activity (research) in the polymers area. They will have a demonstrated record of promoting diversity and inclusivity in undergraduate education as well as a dedication to the well-being and advancement of students, colleagues, and the department.

- Demonstrated experience and commitment to student-centered learning and teaching, as well as the ability to collaboratively work in multidisciplinary settings, are required. Demonstrated proficiency in written and oral use of the English language is required.
- The ideal candidate will show evidence of attention to issues of diversity, equity, and inclusion across their teaching, scholarship, and service.
- Applicants must submit a diversity statement which focuses on evidence of the applicant's commitment to diversity, equity and inclusion, and a description of how you will demonstrate a commitment in these areas in teaching, research, and/or service at Cal Poly. Potential topics may include but are not limited to: implementing inclusive classroom environments, the intersection of DEI in your research/scholarship, mentoring students with diverse backgrounds, outreach to under-represented student populations, implementing bias mitigation and previous professional development in diversity and inclusion topics.

PREFERRED QUALIFICATIONS

Cal Poly's College of Engineering is committed to creating and sustaining a diverse university community that reflects and serves the population of California. Applicants must submit a diversity statement that displays evidence of the applicant's ability to support a diverse and inclusive environment including

implementing inclusive classroom environments, mentoring students with diverse backgrounds, outreach to underrepresented student populations, implementing bias mitigation, and previous professional development in diversity and inclusion topics.

Preference will be given to those who can show evidence of working with diverse populations and fostering a collaborative, supportive and inclusive environment.

Applications are due Thursday, Dec. 1. Interested candidates must attach (1) a cover letter, (2) curriculum vitae, (3) a statement on teaching, (4) a statement on research, and (5) a statement on Diversity. Please be prepared to provide three professional references with names and email addresses when completing the online faculty application. Questions regarding this recruitment may be directed to Dr. Trevor Harding, Chair of the Materials Engineering Department at tharding@calpoly.edu.

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3062 H.H. Dow Building
Ann Arbor, MI 48109