COLLEGE OF ENGINEERING
MATERIALS SCIENCE & ENGINEERING
UNIVERSITY OF MICHIGAN

TEAMMSE

FALL 2024 - November 21 (Issue #6)

In today's pre-Thanksgiving issue, we have a feast for your eyes: our stunning 2025 calendar image winners, so make you scroll to the end. One timing note: our last issue of the semester will come out on Dec. 12 and will include holiday party photos. Speaking of which, don't forget to register for the party (Dec. 9 at the Union) by tomorrow, Friday, Nov. 22!

Events look-back

MSE voters (a.k.a., good citizens) enjoy a pizza luncheon on Nov. 7. According to today's *Record*, U-M's two Campus Voting Hubs saw a threefold increase in campus voter engagement in 2024 over the 2022 midterm election. This year, the hubs accounted for 88% of the city of Ann Arbor's in-person voter registrations.

Upcoming department events

02
DEC

GRADUATE TOOLKIT: "CREATING YOUR OWN MENTORSHIP BOARD FOR GRADUATE SCHOOL SUCCESS" WITH GEETA MEHTA

Please join us for the last Graduate Toolkit of the semester, hosted by PhD program chair Geeta Mehta. Lunch provided for all registrants. **Register here**.

Date: **Monday, December 2**
Time: **12:30-1:30 pm**
Where: **2000 PML**

09
DEC

PHD DEFENSE: MATTHEW WEBB

A member of the Heron group, Matt Webb will present "Analysis of Phase Stability and Defect Mobility in Functional Oxides Exposed to Extreme Conditions" on Monday, Dec. 9. Zoom link: https://umich.zoom.us/j/99269335843, Passcode: 3987363

Date: **Monday, December 9**
Time: **9:00 a.m.**
Where: **1311 EECS**

09
DEC

MSE HOLIDAY PARTY

Mark your calendars and plan to join us for the always-fun-and-festive MSE holiday party in the Michigan Union. Activities will once again include an Ugly Sweater contest. All are invited!

Date: **Monday, December 9**
Time: **6-9:00 pm**
Where: **Rogel Ballroom, Michigan Union**

Faculty News & Awards

RACHEL GOLDMAN ELECTED TO AMERICAN PHYSICAL SOCIETY (APS) COUNCIL OF REPRESENTATIVES

Maria Goeppert Mayer Collegiate Professor Rachel Goldman has been elected to the Council of Representatives

of the American Physical Society (APS), for a three-year term to begin in January 2025. Goldman previously served as Chair of the APS Division of Materials Physics (DMP). In her new role as DMP Councilor, she will serve as a liaison between the APS membership, the Board of Directors, and APS management, representing and speaking on behalf of the DMP members, and communicating between the Council and the DMP Executive Committee.

Congratulations, Rachel!

JINSANG KIM RECOGNIZED FOR LEADING MACRO PROGRAM FOR SEVEN YEARS

At the Macro Symposium on Friday, **Professor Jinsang Kim** was thanked for serving as director of the Macromolecular Engineering program for seven years. Kim received a special plaque from Macro program manager **Carolina Benn** (pictured on the left). "We are so grateful for his efforts and contributions to the Macromolecular Science and Engineering program over the last seven years," Benn said.

A new Macro director will be announced in the coming weeks.

Congratulations, Jinsang!

Staff News

XIANG GAO JOINS VAN VLACK LAB STAFF

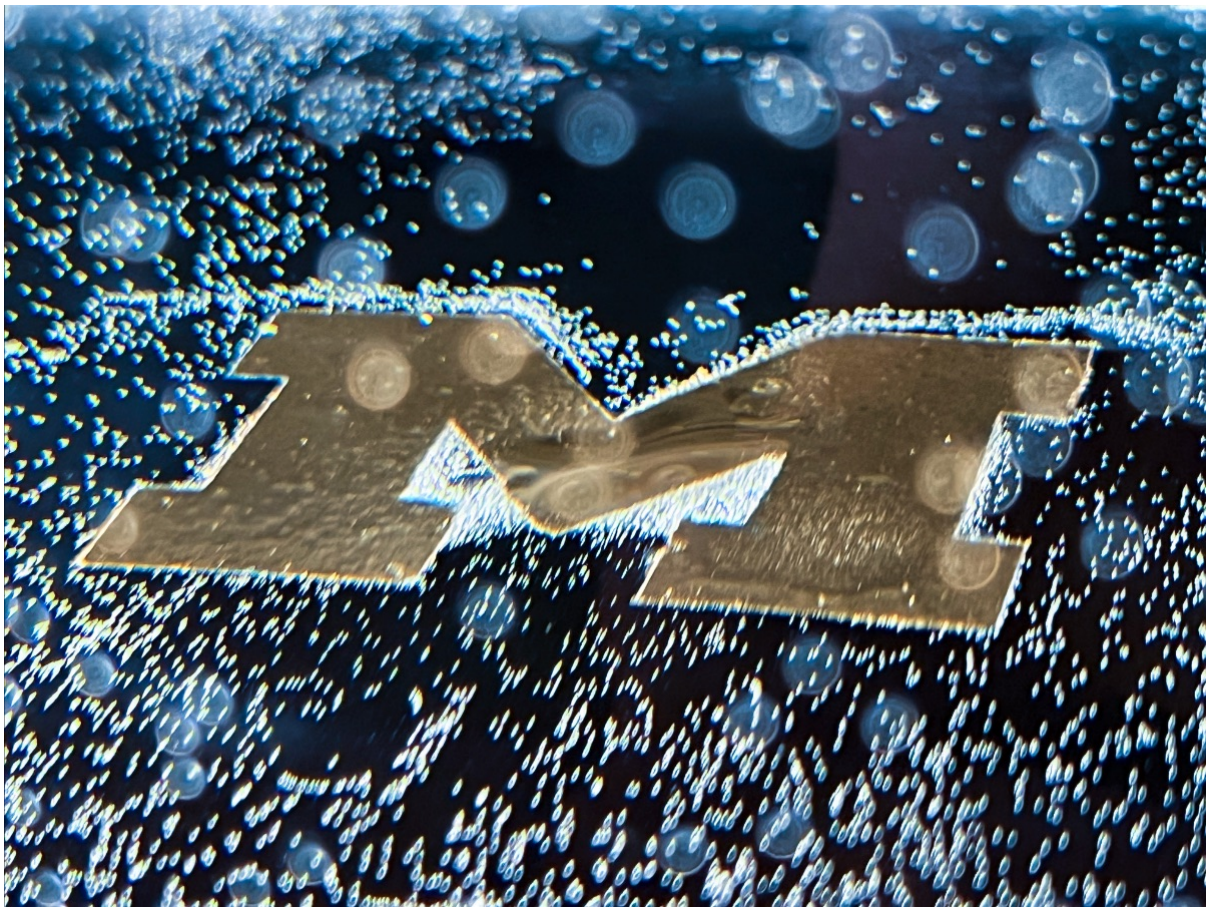
Xiang Gao is the newest member our Van Vlack Lab staff. She replaces Ying Qi, who retired last month, as senior research project engineer. Gao joins us after working for the past three years at Michigan Medicine. Prior to joining the university, Gao was an associate professor at China University, where she taught courses, conducted research and managed an x-ray diffraction lab. Her office is 2219A Dow.

Welcome, Xiang!

Calendar contest winners

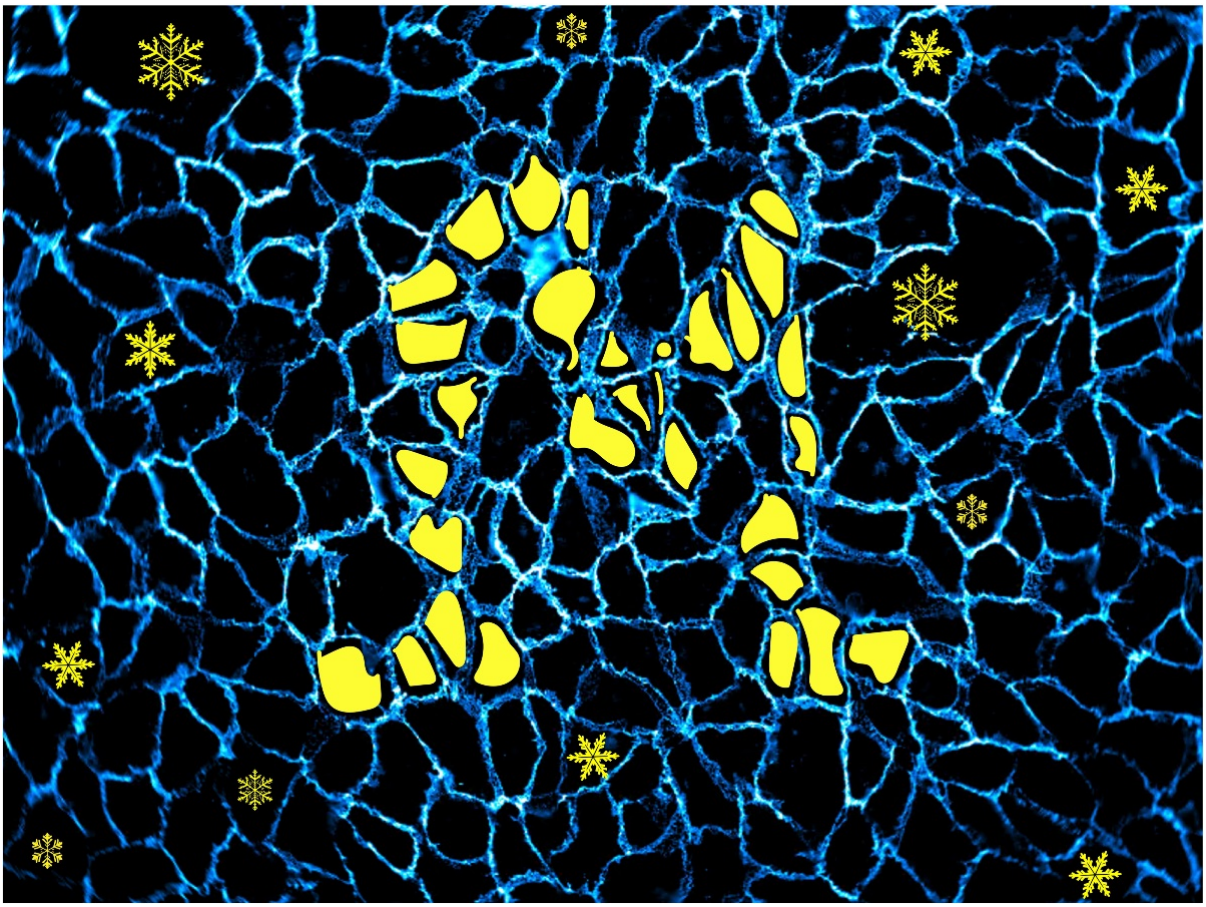
Wow This year's calendar image contest was an incredible one! Twenty-eight individuals submitted a whopping **72** images, which was a record--by far. The selection process was tough - so tough that 14 images were chosen for the calendar and five additional images were picked that we will use in various marketing projects, including some murals in the Dow Building. **Thank you** to everyone who submitted images. You are beyond talented. and we look forward to seeing your works of art next year. NOW, It is with much excitement and pride that we present the 2025 calendar image contest winners....

COVER: "UNDERWATER SILVER BADGE" BY BOZHONG ZHUANG (TUTEJA GROUP)



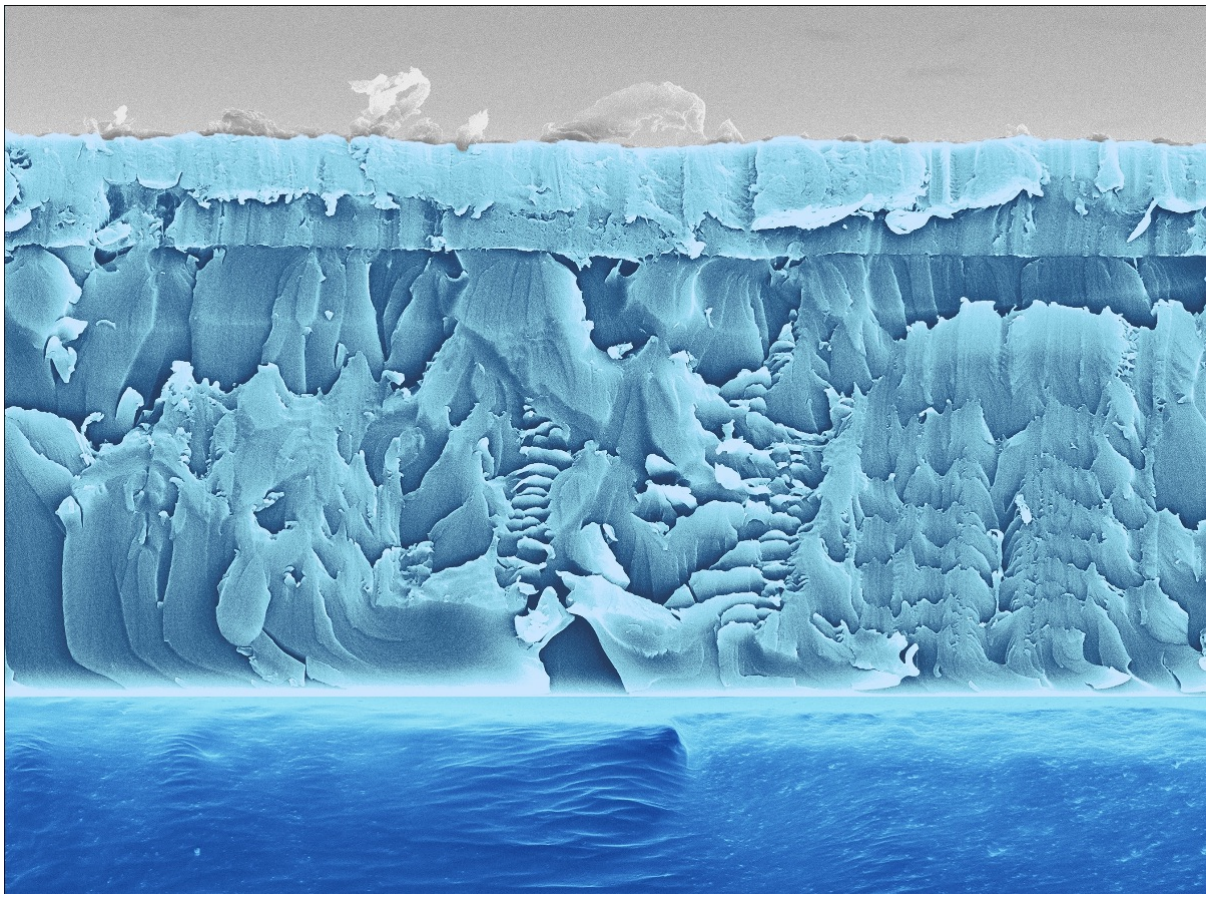
Cracked TiO2 layer of a solar cell

"M OF TOMORROW" BY AVINAVA ROY (LOEBEL GROUP)



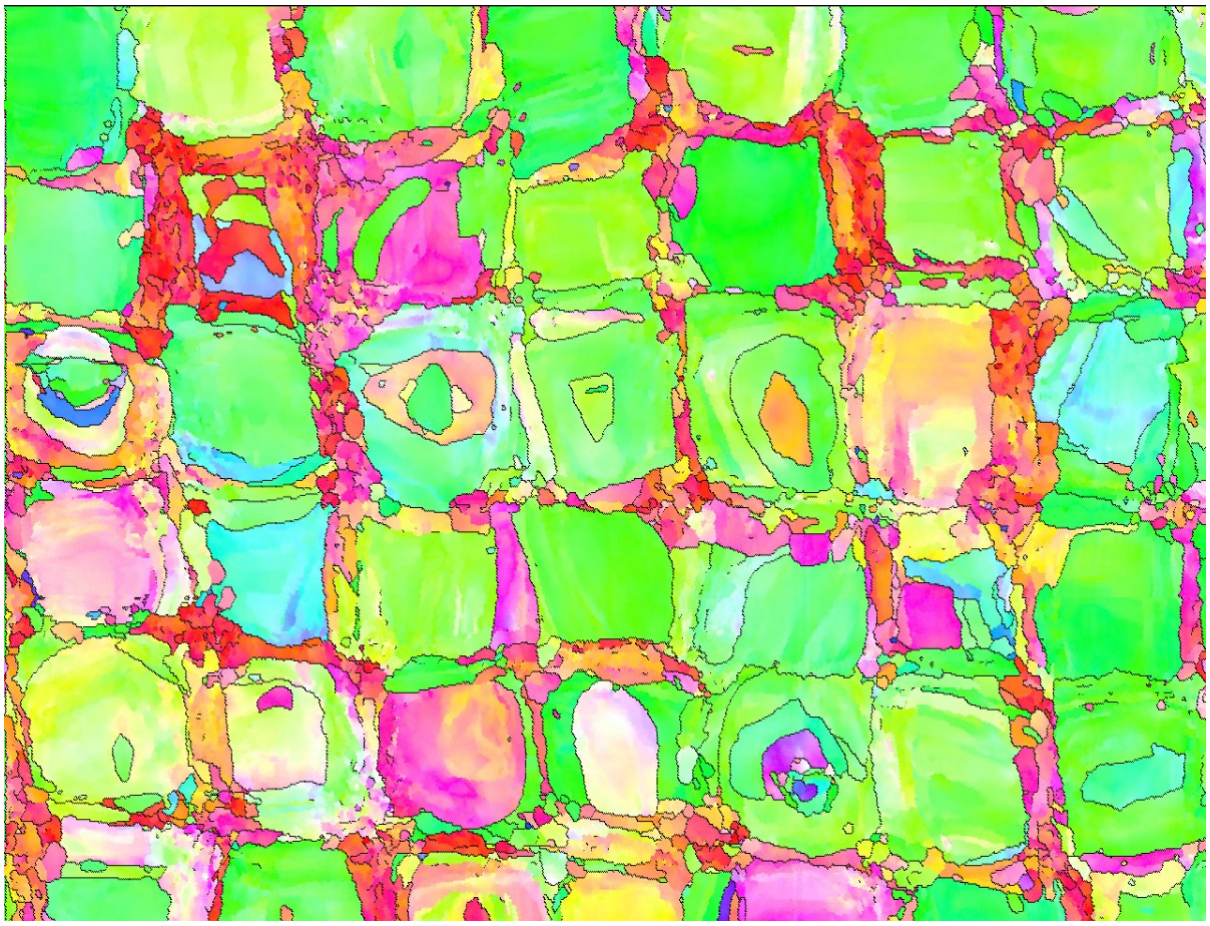
Background: Human Umbilical Vein endothelial cells forming a tight monolayer - with fluorescent staining of the VE-Cadherin protein in the cell-cell junctions. Foreground: Partially colored cells and tiny flakes and christmas trees using Adobe Illustrator.

"GLACIER" BY CHUQI HUANG (PENA-FRANCESCH GROUP)



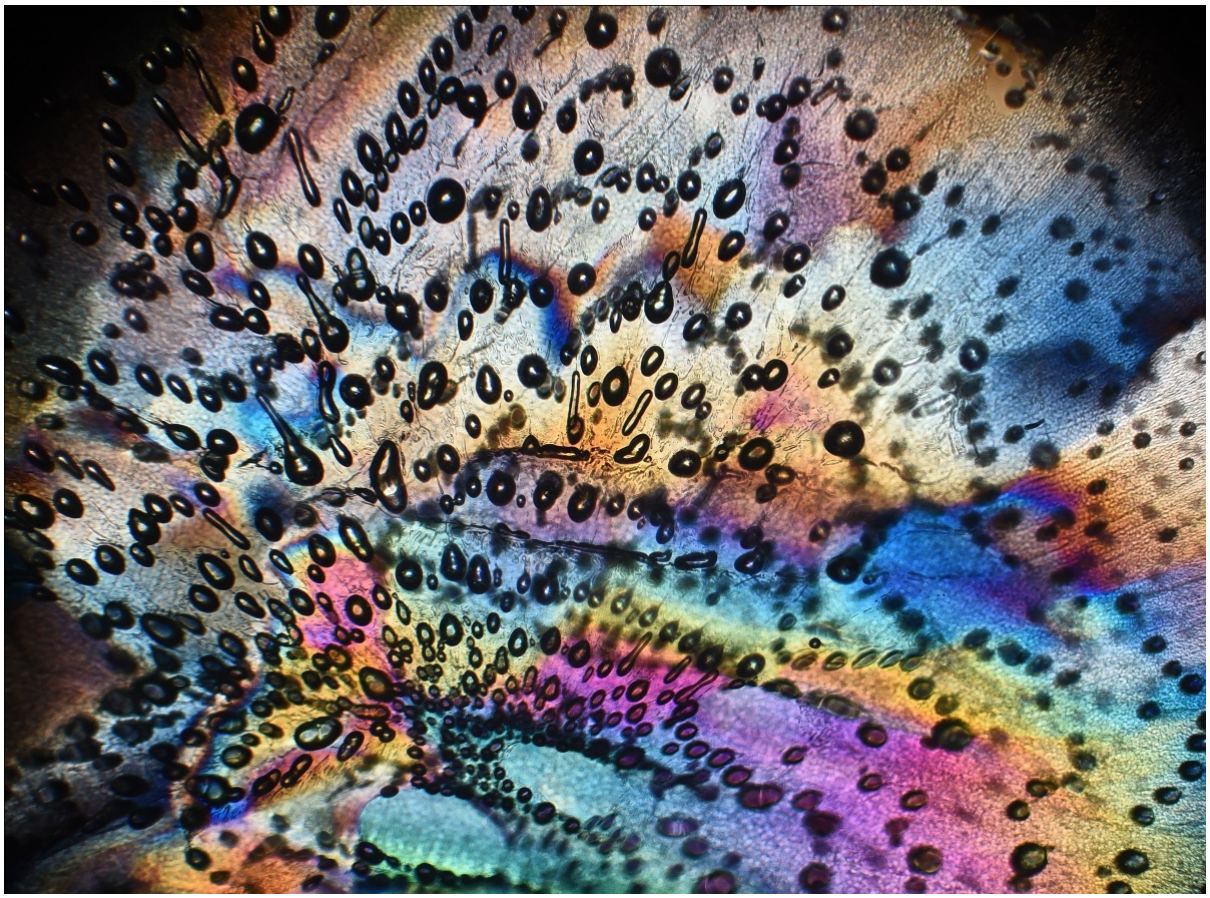
The interfacial SEM image of liquid crystal networks and squid ring teeth protein-based motors.

"WATERCOLOR MOZAIC" BY REZA ROUMINA (MARQUIS GROUP)



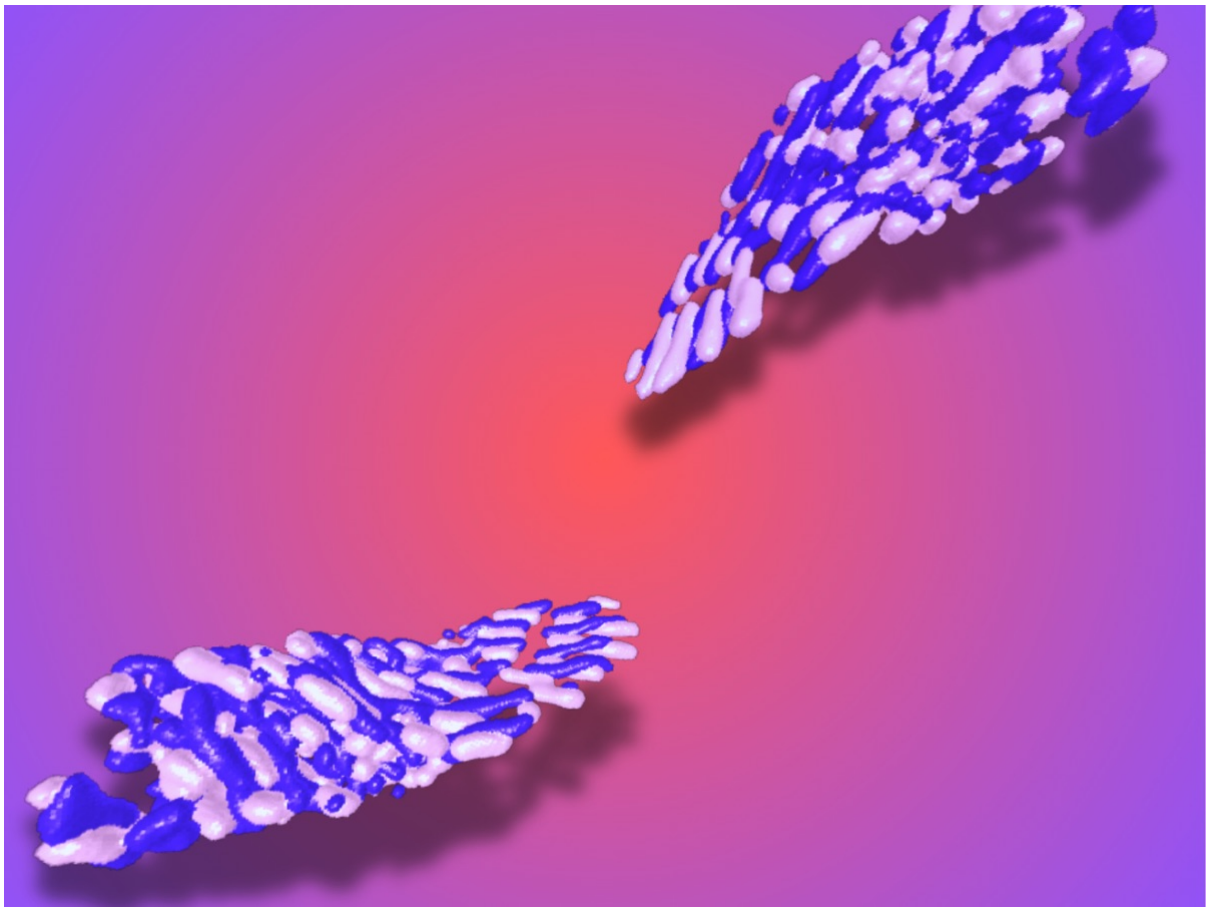
As-Built-NiCoCr-Non-ODS-watercolor mosaic-No-Scale

"FROZEN BLOOM" BY MATTHEW WU (TUTEJA GROUP)



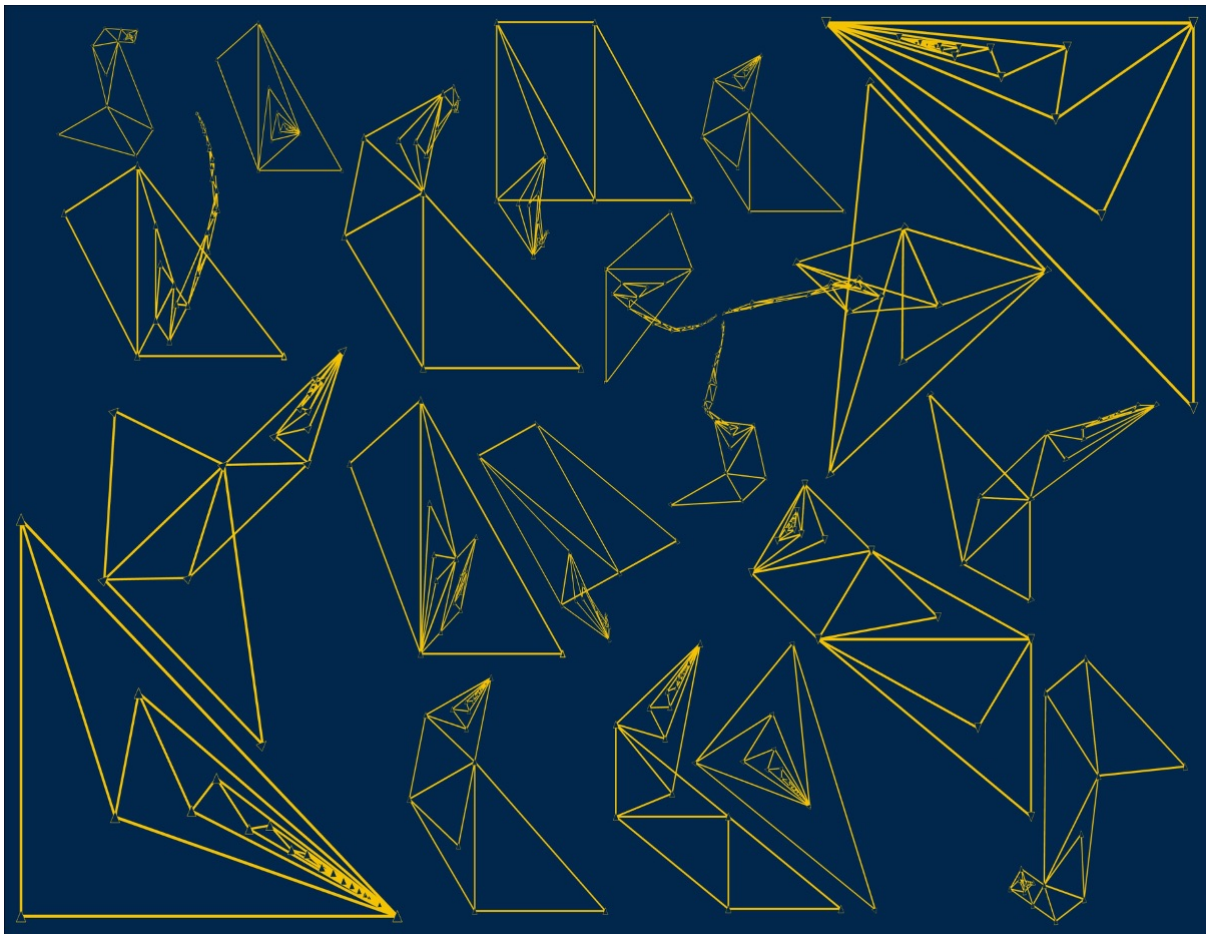
Frozen expelled bubbles in ice by polarized light microscope

"REACHING OUT..." BY SOUMYADEEP DASGUPTA (SHAHANI GROUP)



Ternary eutectic intermetallic network captured using xray tomography. (for May - Mental Health Awareness Month)

"OPTIMAL" BY JOSH WILLWERTH (SUN GROUP)



Plots of Nelder-Mead optimization pathways to fit liquid free energy parameters in binary alloy systems

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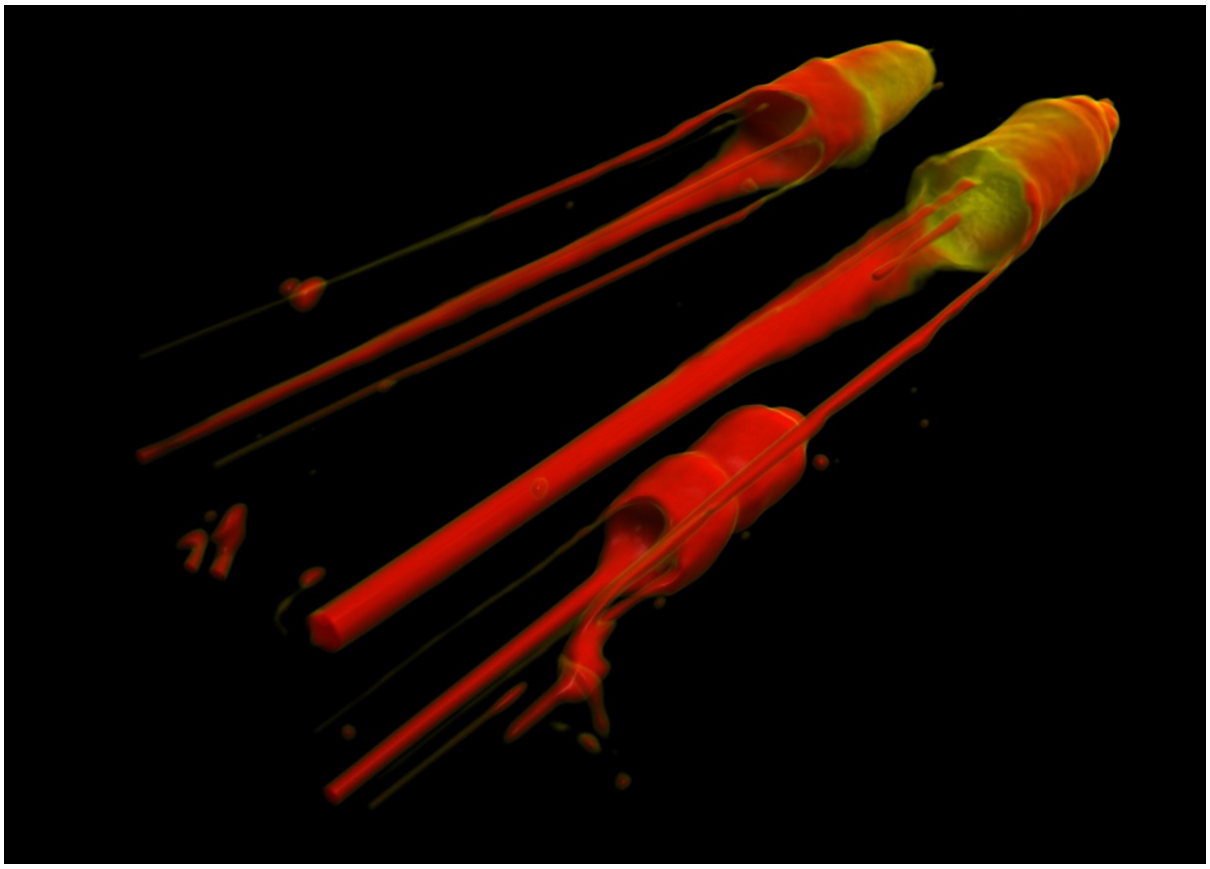
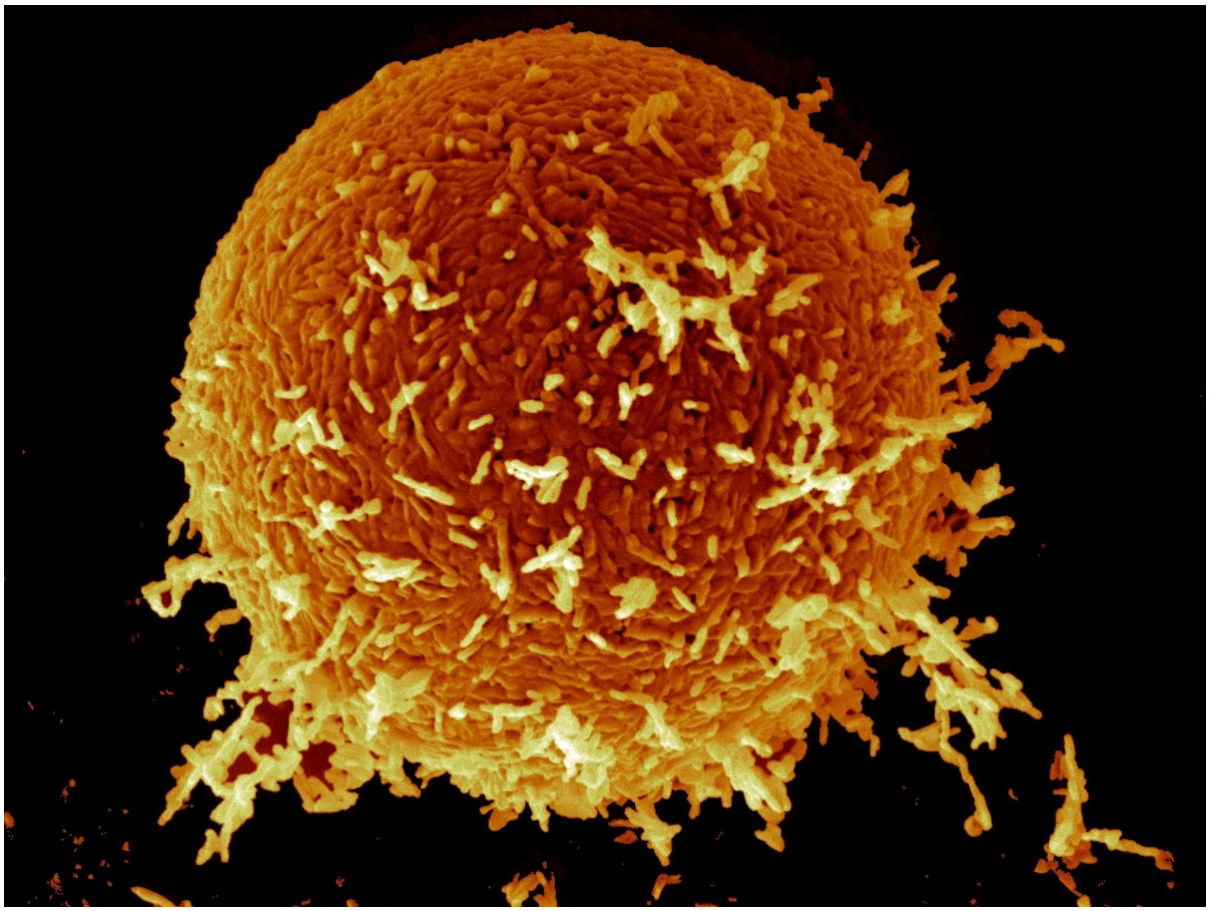
"MICRO-SCALE ROCKETS" BY JAIME PEREZ CORONADO (SHAHANI/TAUB GROUPS)



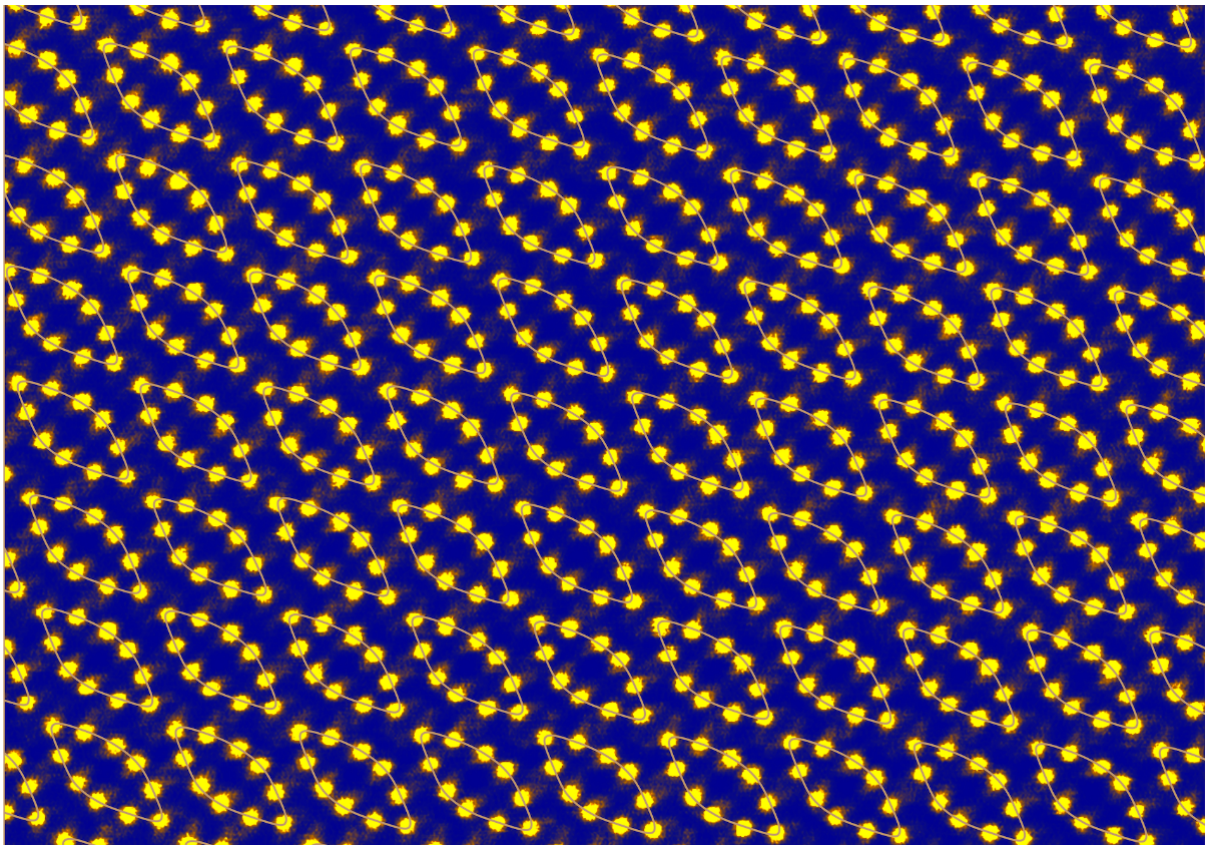
Off-monotectic growth of aluminum indium revealing a “rocket” type of microstructure. The rocket is forming an intrail (indium-rich trail) behind its path. 3D reconstruction after characterization by micro-CT.

"THE SUN" BY EVA PONTRELLI (SHTEIN GROUP)



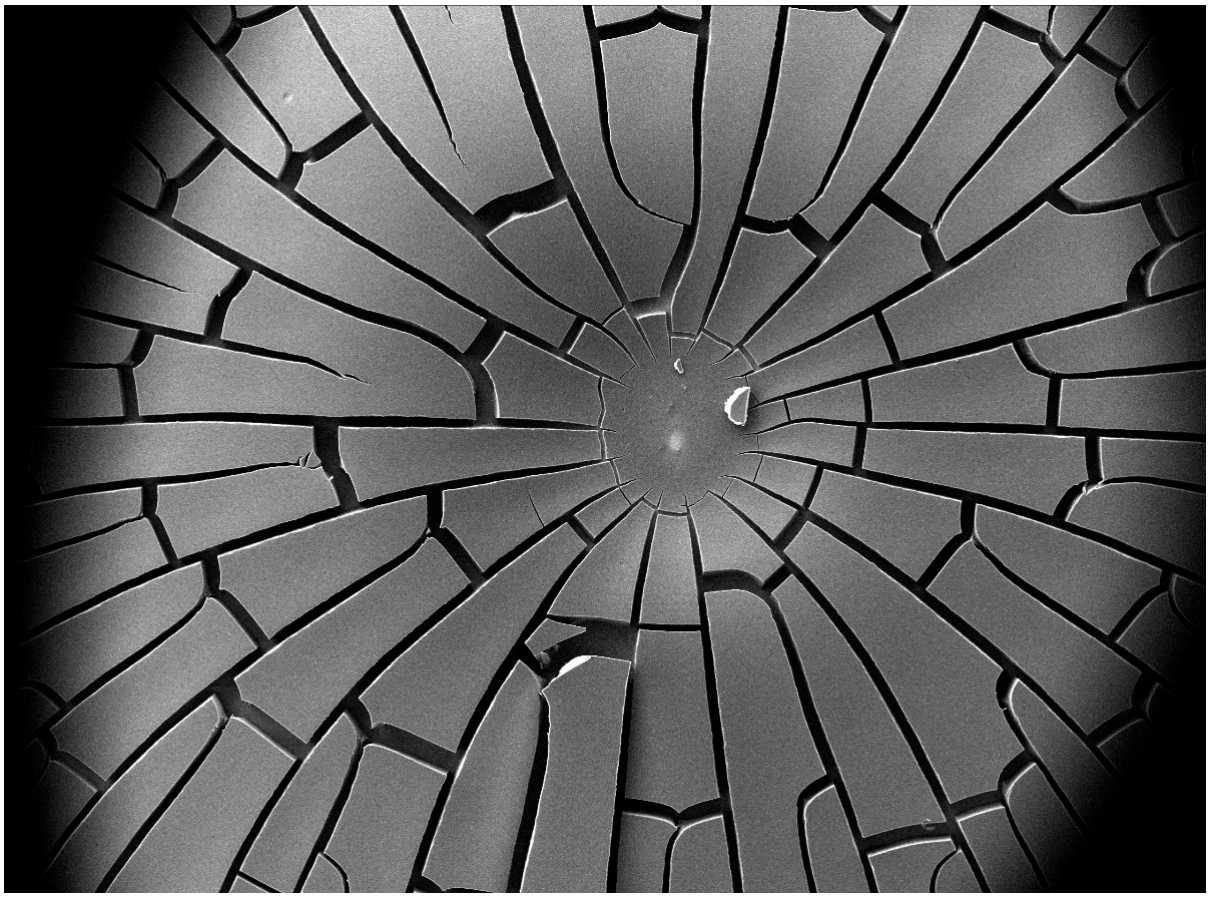
This is a sphere of atovaquone nucleated and grown in the gas phase. The smaller particles clinging to it are the same material, but since this process occurs in a nonuniform vapor steam, they likely nucleated later and/or in lower vapor concentration and had less time/material for growth.

"GAME DAY" BY ARKAJIT GHOSH (MISRA GROUP)



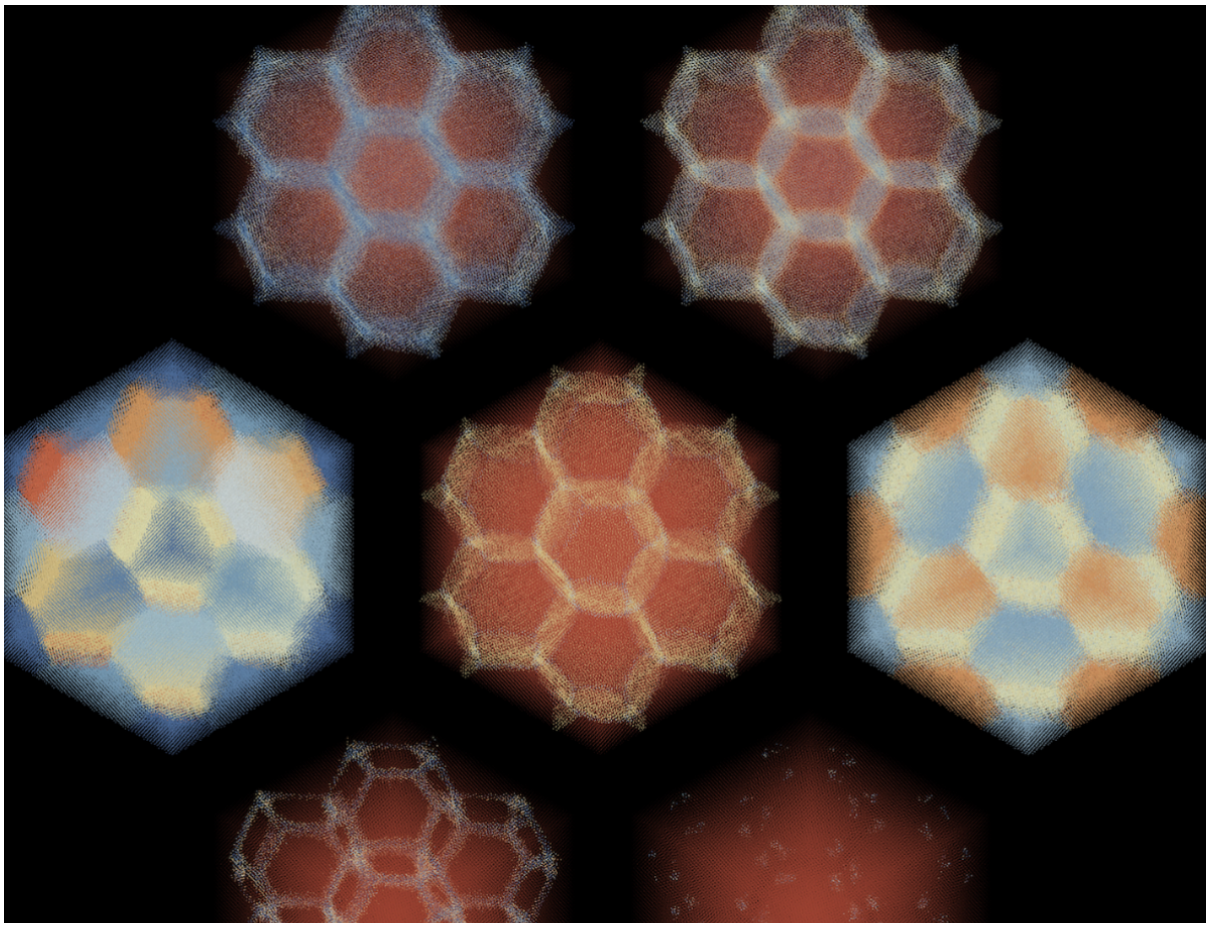
This is a high resolution high angle annular dark field scanning transmission electron micrograph revealing atomic arrangements in a newly discovered monoclinic Al6Ge5 intermetallic from [001] zone axis.

"SPOOKY SPIDER SOLAR CELL" BY MOLLY RODGERS



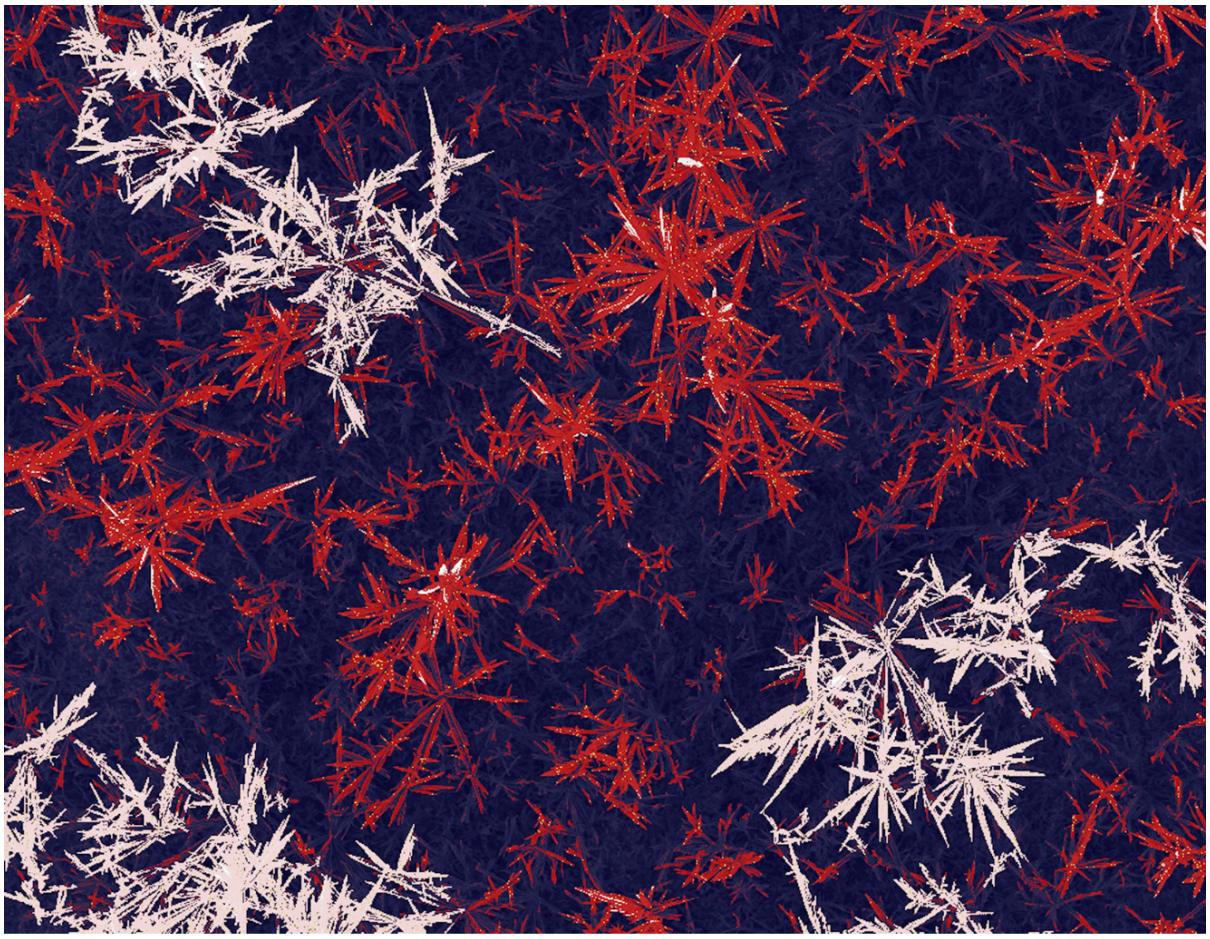
Cracked TiO2 layer of a solar cell

"KALEIDOSCOPE OF GEOMETRIC PATTERNS" BY MEIZHONG LYU (HOLM GROUP)



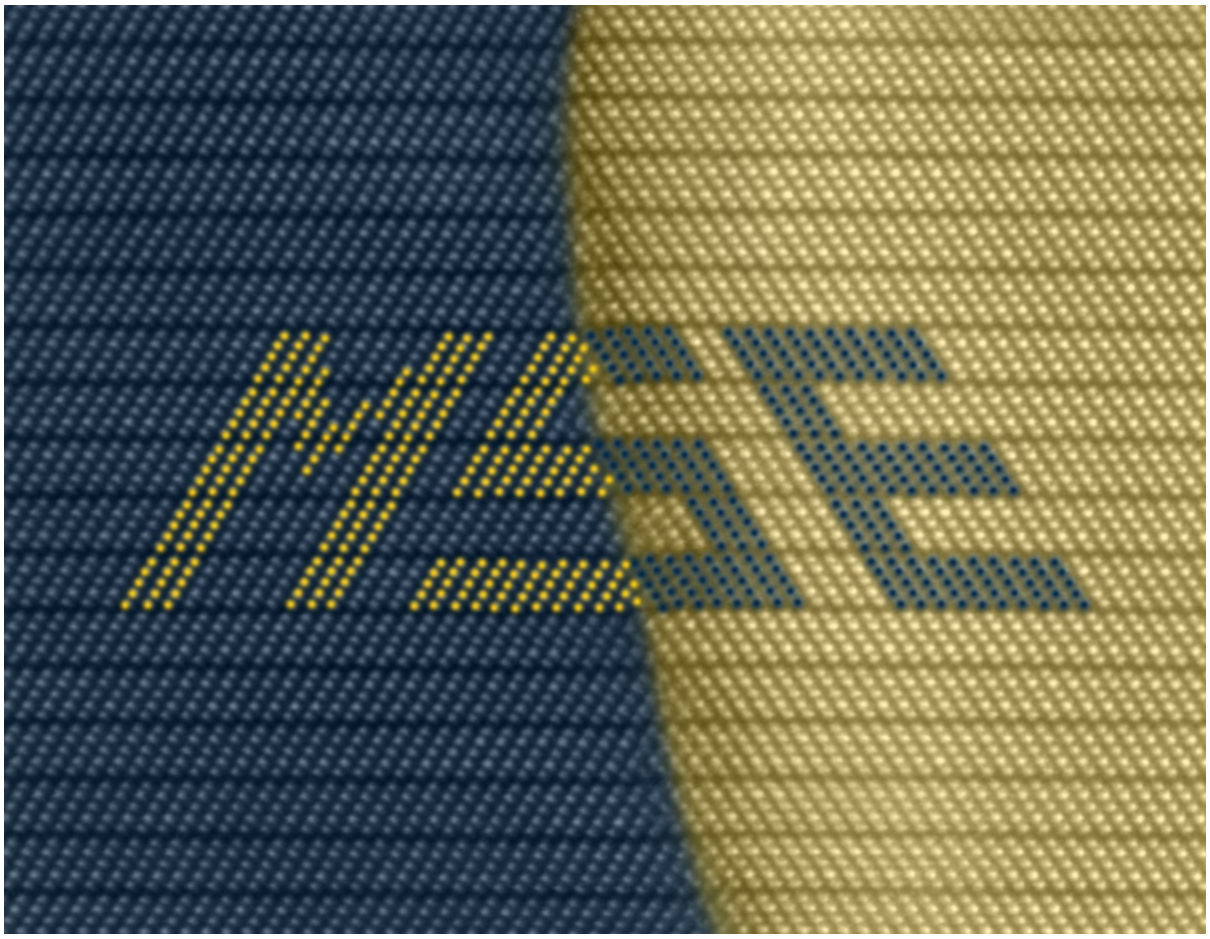
This is a 3D structure I designed this year while researching the uncertainty of microstructure in Molecular Dynamics simulation. It consists of 16 identical truncated octahedron.

"HOLIDAY SPARKLES" BY EVA PONTRELLI (SHTEIN GROUP)



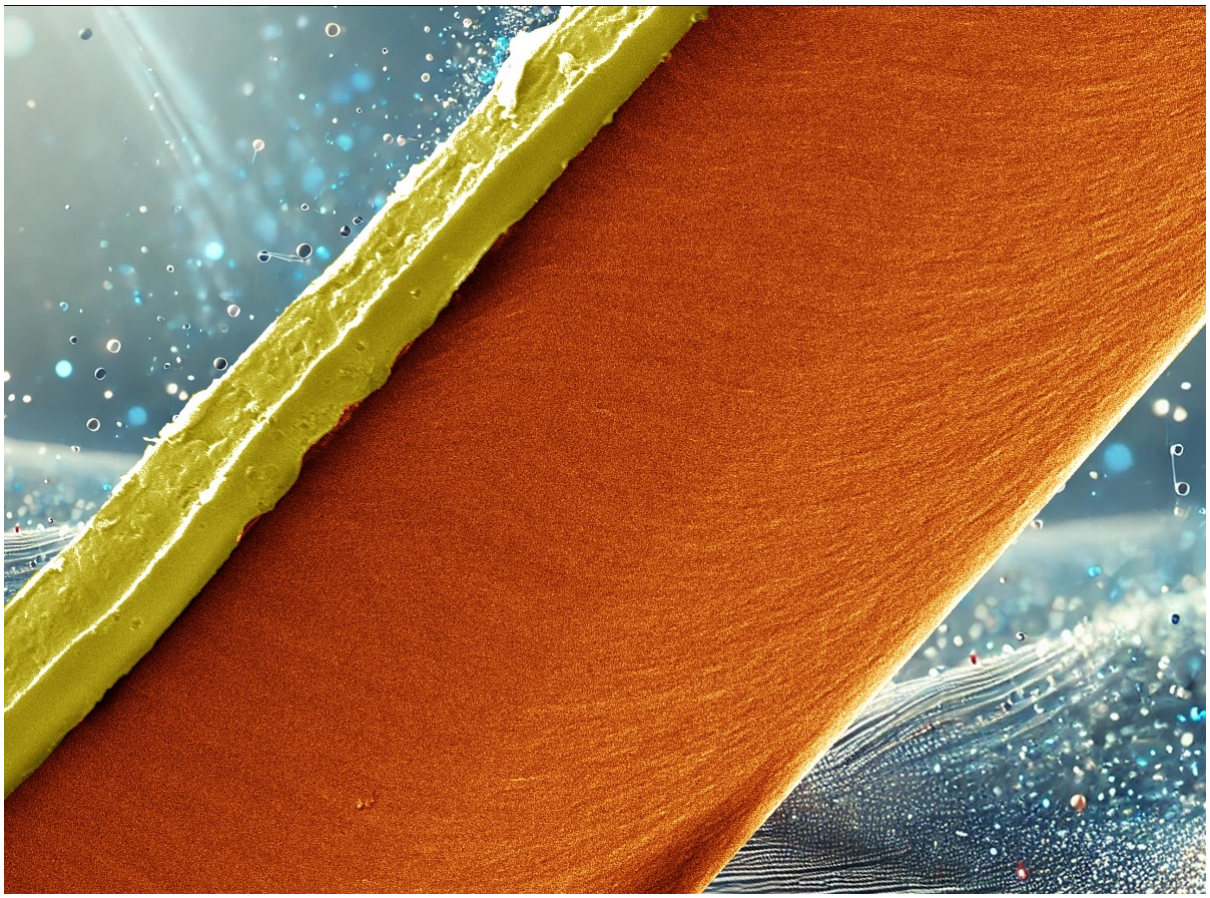
This is atovaquone (an antimalarial drug) grown via vapor deposition. This sample was grown by depositing for a short time, then allowing the substrate time to dissipate heat, then depositing again, cooling again, etc. The result is an alternation between nucleation-dominated and growth-dominated deposition, so we see needle growth followed by fresh nucleation and growth of new needles on the old ones.

BACK COVER: "ATOMIC MSE" BY ABBY LIU (GOLDMAN GROUP)



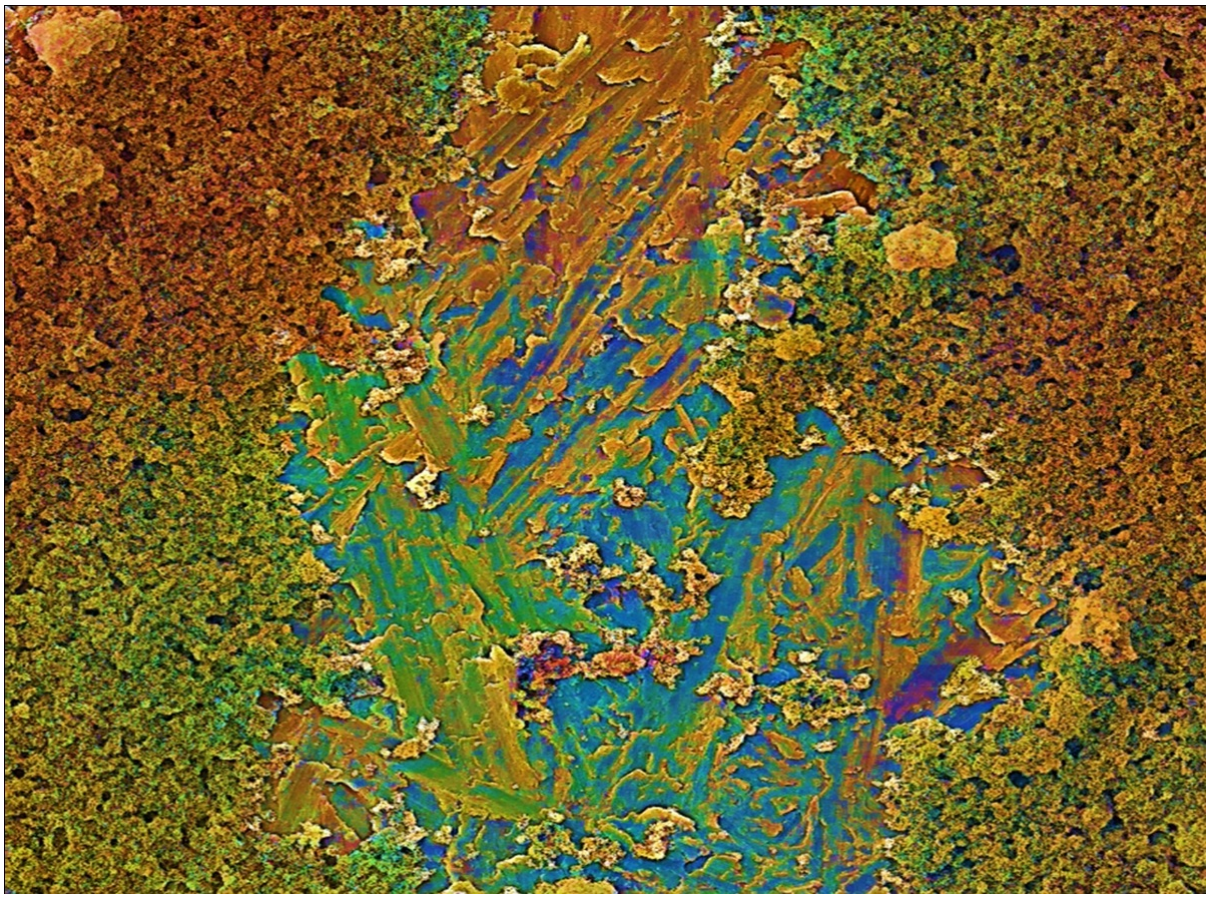
AADF-STEM image of BiSbTe showing a 60° twin boundary at atomic resolution.

EXTRA: "SALMON" BY CHUQI HUANG (PENA-FRANCESCH GROUP)



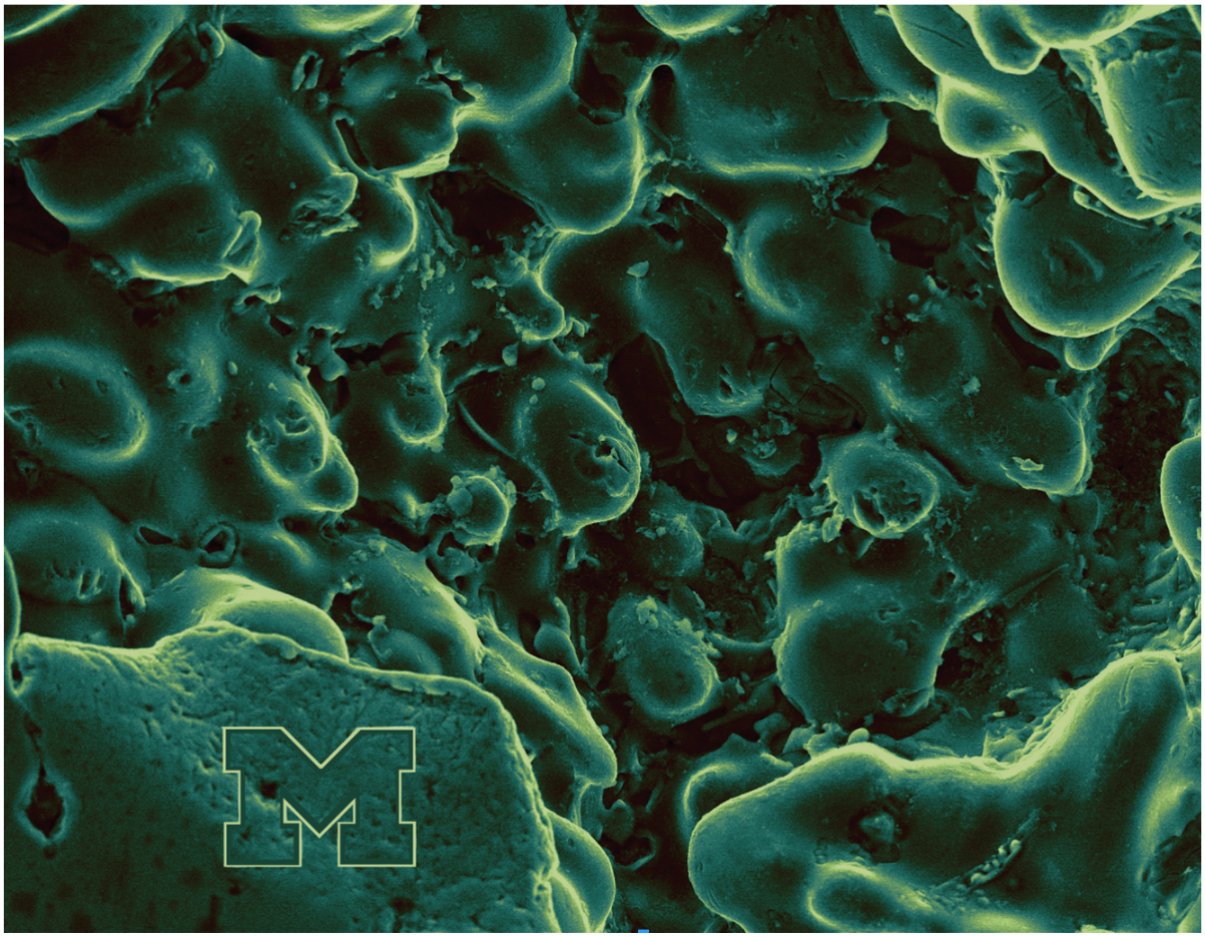
The interfacial SEM image showing the molecular alignment of liquid crystal networks (orange) and the porous network of squid ring teeth protein-based motors (yellow).

EXTRA: "FALL IN MICHIGAN" BY FAN-WEI WANG (TUTEJA GROUP)



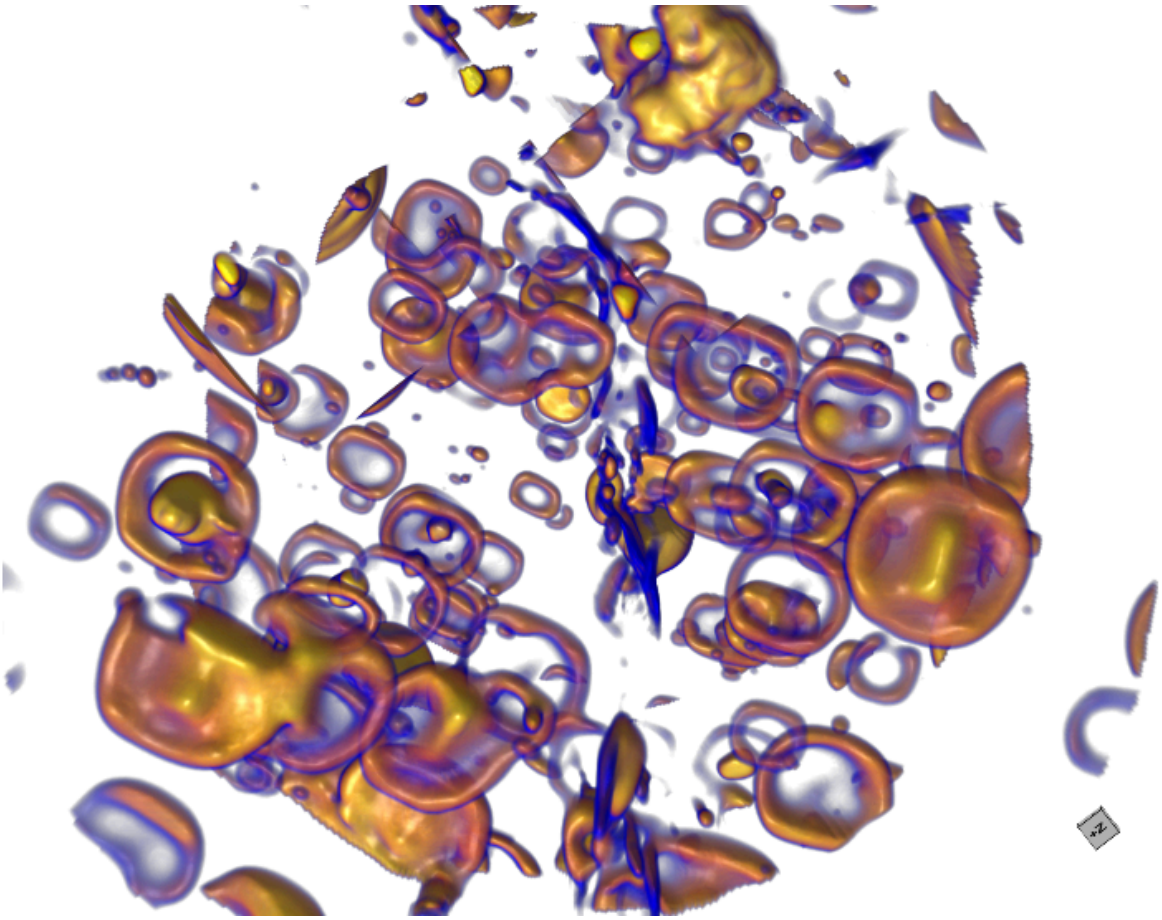
Partially abraded silica nanocomposite coating

EXTRA: "THE HAUNTED PORE" BY MIA FRANK



SEM image of a pore in a modified version of aluminum alloy A356.1.

EXTRA: "THE ELEGANCE OF RINGS: SEAMLESSLY WOVEN INTO A CAPTIVATING 3D TAPESTRY" BY SHANMUKHA KIRAN ARAMANDA (SHAHANI GROUP)



Microstructure of a Al-In alloy

EXTRA: "GOLDEN COMET" BY CAROLINE HARMS (PENA-FRANCESCH GROUP)

poly(3,4-dihydroxybenzylamine) on PDMS

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