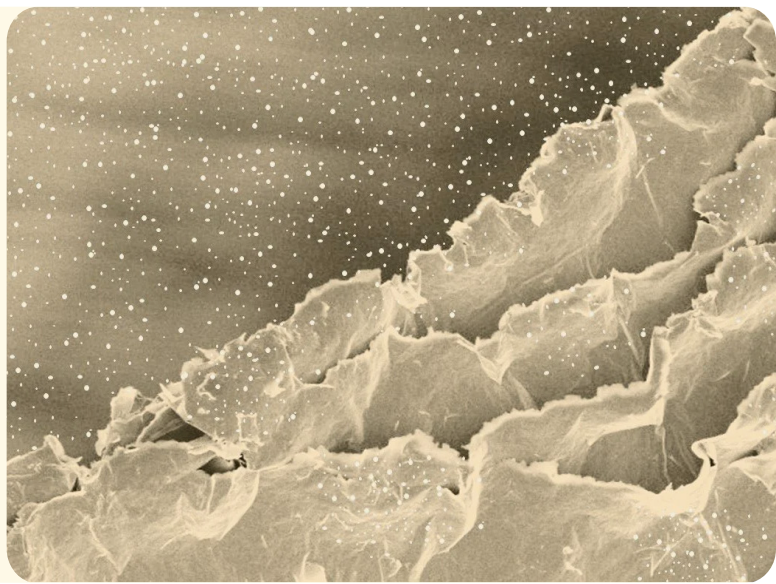
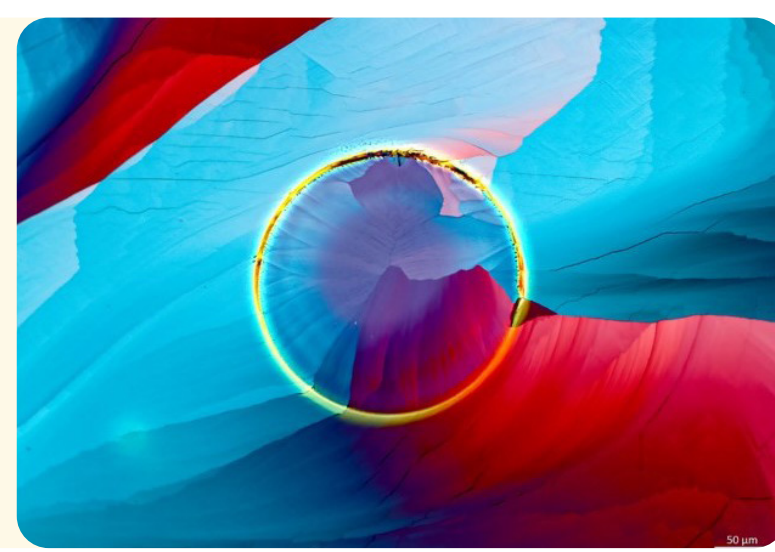


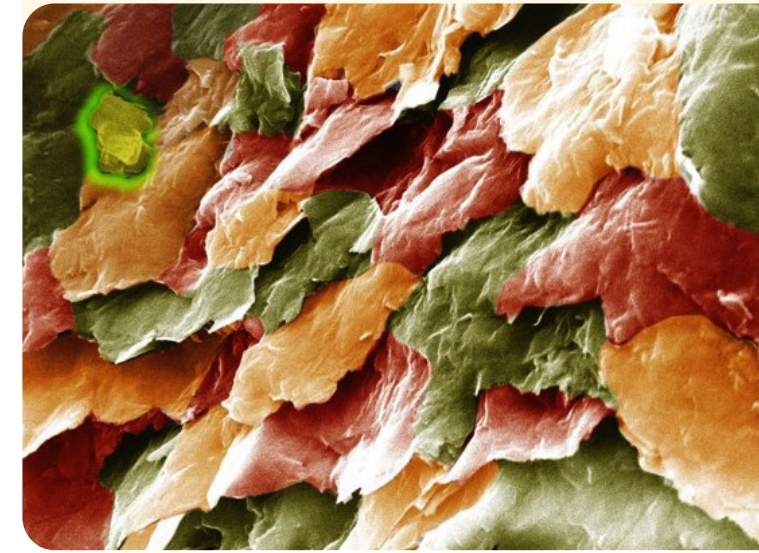
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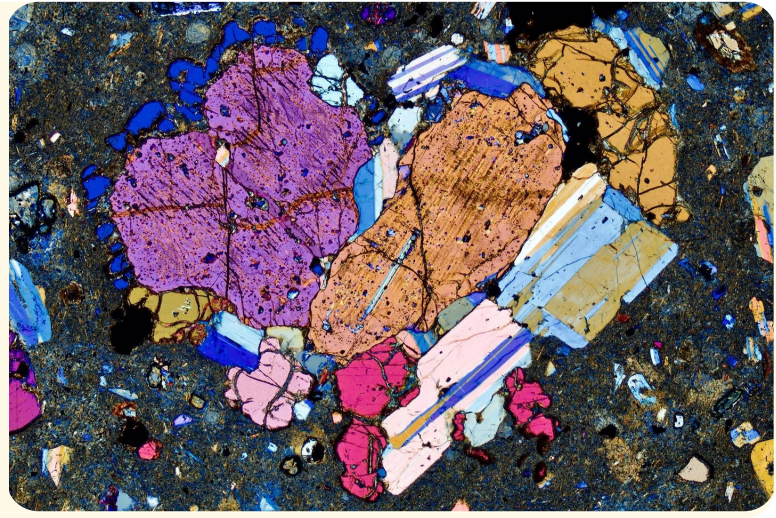
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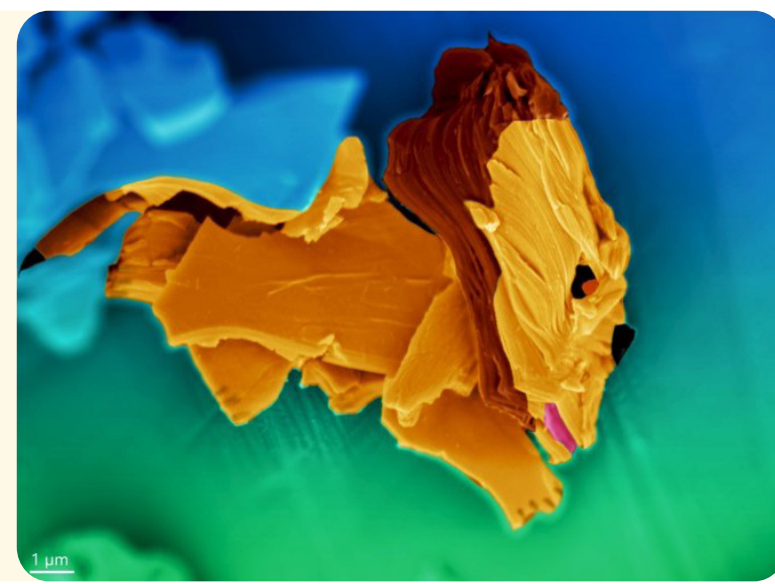
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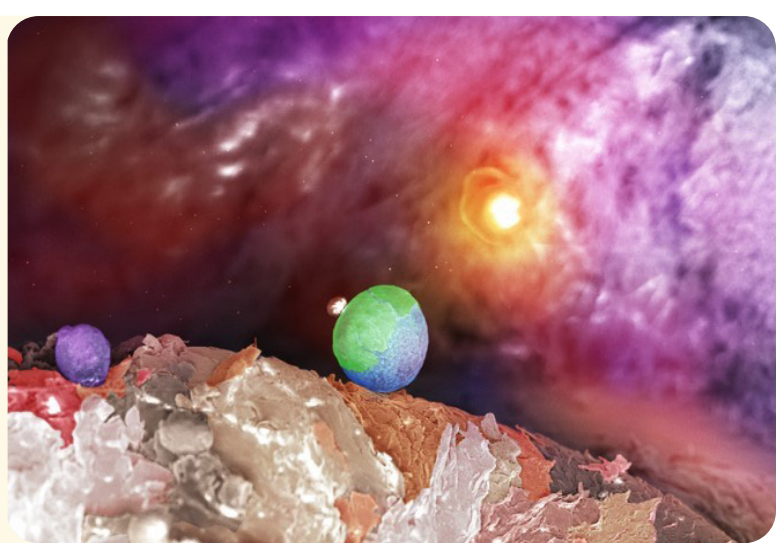
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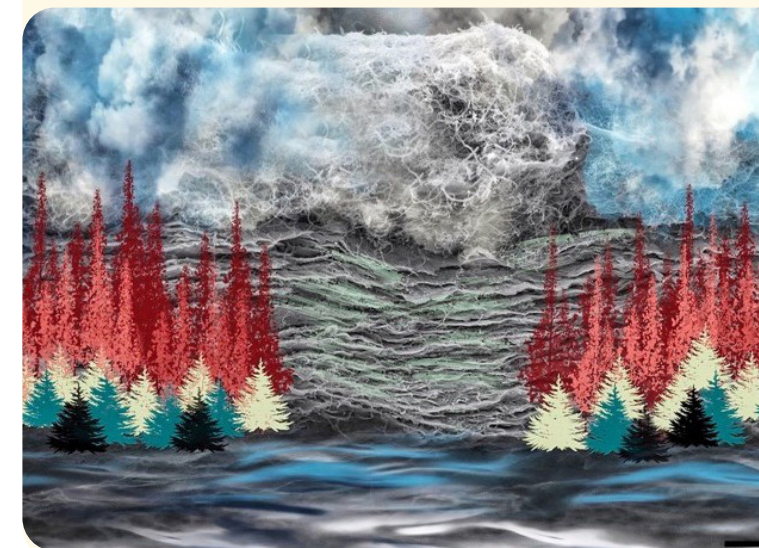
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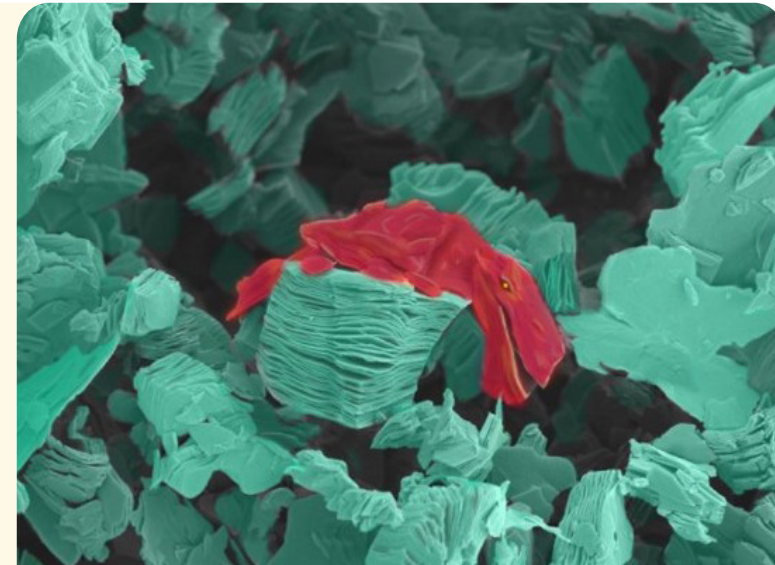
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2023 Calendar



DREXEL UNIVERSITY
A.J. Drexel
Nanomaterials Institute

NANO
ARTOGRAPHY

Dear Colleagues and Friends,

As 2022 comes to a close and we gather with family and friends to reflect on the year past, I am impressed with the A.J. Drexel Nanomaterials Institute's accomplishments and achievements. DNI has stayed exceedingly productive as we've continued to navigate this ever-changing environmental landscape. Our students and alumni remain active in obtaining great jobs, winning numerous national and international awards, publishing in high-impact journals (5 papers in *Nature* family journals in 2022), building impactful collaborations, producing an international conference, and participating in exciting, sponsored research supported by industry, private foundations, and funding agencies in the US and abroad.

While the ongoing war in Ukraine has drawn a dark cloud over many, including my family and the scientific community at large, I am energized by the people, Ukrainians, scientists, and international supporters who have stood strong against the devastating, senseless activity that has affected my family and homeland. We were awarded a grant to support Ukrainian scientists joining the YUCOMAT conference in Montenegro, with thanks to the AFOSR and Dr. David Swanson, who was able to attend and present as well. And joined by many colleagues in support, together we penned an open letter to our community lifting science above violence (published in *Chemistry World*) and produced an editorial "Tanks and Truth" for *ACS Nano*.

Our week-long MXene Synthesis and Characterization course in February included a new lecture on biomedical applications, and we received wonderful feedback from participants. We are excited about our next course (February 2023) with refreshing updates to our presentations and many new instructors. A condensed in-person MXene course was given the day before our MXene Conference, which was held in our College of Engineering at the beginning of August and engaged folks across academia and industry with a shared interest in improving our world through the application of MXenes.

As a reflection of the exponential growth in interest in MXenes, four MXene-focused conferences were held in 2022. At the MRS Spring meeting in Honolulu, DNI alum Prof. Babak Anasori organized an outstanding MXene symposium, including important talks and activities. This highly successful event was welcomed back for a second symposium at the MRS Fall meeting in Boston. Additionally, the International MXene conference was held in China and virtually in August after a delay due to COVID. And lastly, we were pleased to offer our 2nd MXene conference, and the first held in person, at Drexel University. Members from our group traveled to, won awards, and, by invitation, presented at each of these events.

From August 1-3, 2022, the Second International MXene Conference was held at Drexel's College of Engineering, MXenes: Addressing Global Challenges with Innovation. With resounding acclaim for this event, we welcomed over 225 attendees from 27 countries around the world to the A.J. Drexel Nanomaterials Institute, the College of Engineering, and Drexel University. Engaged throughout the duration of the 3-day event were also 50 virtual attendees, including 12 Ukrainian scientists whose attendance we openly supported.

The conference was supported by 21 sponsors! Ranging widely from large open funding to poster awards. We were honored to be endorsed by MRS. We also received an award from NSF to support students from US universities to attend the conference, which covered travel and accommodations, and registration for ~50 students. Thank you to Professor Masoud Soroush for preparing the proposal, and Dr. Khershed Cooper,

NSF Program Director, for this support. Dr. Cooper also presented a talk on NSF Funding for Research during the conference, an invaluable topic for our community. In addition to the full days of panels and talks by 55 presenters, the lobby was abuzz with enthusiastic conversations over the 80 posters displaying the vast variety of MXene research.

Our group has continued to evolve. On the heels of the invigorating conference, our group retreated to the Poconos where we strategized exciting new endeavors and strengthened plans for our lab. We welcomed many new visiting researchers and guest collaborators to our lab, new postdocs: Stepan Vorotilo, Hyunho Kim, and Stefano Ippolito, and four new PhD students this fall: Asaph Lee, Schlumberger scholar Sokhna Dieng, James Fitzpatrick, and Joel Frostad. And we bid farewell with best wishes to others, including our Research Assistant Professor Armin VahidMohammadi who took an industry position, and Postdoc Meikang Han who joined Fudan University in China as faculty.

Many of our current members and alumni have also been recognized by prestigious awards, produced highly acclaimed publications, in addition to new positions. Gleb Yushin was featured in *Forbes*, designated a Regents' Entrepreneur from the University System of Georgia for his pioneering work, and his company Sila Nanotechnologies received a \$100M grant from DOE. Alumni Kelsey Hatzell and Prineha Narang received the Office of Naval Research Young Investigator awards. Undergrad Ms. Marley Downes received several scholarships this year, including a Minerals, Metals, and Materials Society (TMS) scholarship and will attend and present her research at their meeting next spring. Our postdoc Ruocun (John) Wang has received the prestigious Cotswold Fellowship for 2023. Alumnus Babak Anasori has been touted as #32 of the World's Rising Stars of Science, and he has been listed as one of five of our alumni as Clarivate's Highly Cited Researchers; the others, Volker Presser, Michael Naguib, Maria Lukatskaya, and Chuanfang (John) Zhang, and my colleague at Drexel. I have also been again listed in two fields – Chemistry and Materials Science. Michael Naguib also won the InfoMat award. Alumna Olha Mashtalir was listed as one of Drexel's 40 under 40, along with my son Pavel. A significant number of other accolades have been bestowed upon this group. Our graduate students and postdocs, including Tetiana Hryhorchuk, Alex Inman, Laura Fusco, Katerina Shevchuk, Mark Anayee, and Kyle Matthews, won a number of awards to attend meetings and at conferences for their posters, presentations, and videos. Fulbright Fellow and current Postdoc in our group, Mohit Saraf, was chosen to participate in the ACS Summer School on Green Chemistry. These are merely a highlight of the many distinctions we celebrated this year. I, myself, was honored to receive the Innovation Award from *Materials Today* in January, delivered a prestigious Rustum Roy Lecture at the annual MS&T meeting, and ended this year with my acceptance into the National Academy of Inventors. Michel Barsoum and I also received the Ceramic Prize from the World Academy of Ceramics at the CIMTEC conference in Perugia, Italy last summer.

In sum, 2022 was an excellent year for MXenes, with 4 dedicated conferences, close to 4000 new publications, and an editorial titled "The Pull of the MXene Vortex" in *Nature Nanotechnology* written by the Editor-in-Chief Alberto Moscatelli. Many conversations around the growing interest were had, and now irons are in the fire on how to increase production. A new journal was initiated, *Graphene and 2D Materials*, co-edited by our alum Babak Anasori, and this is supported by the MXene Association as well, becoming a home for MXene publications. As we turn to a new year, we are energized and excited for what will come next for MXenes and our community.

Best wishes,



IMAGE CREDITS

January: "Mount MXene", Grace Cooksley, University of Brighton, United Kingdom ([2nd place winner of 2022 Nanoartography competition](#))

February: "Heart of the Volcano", Bernardo Cesare, Geosciences Department, University of Padua, Padova, Italy ([3rd place winner of 2022 Nanoartography competition](#))

March: "It's a MXene Universe", Marley Downes, Kyle Matthews, Mohit Saraf, Drexel University, USA

April: "Mary had a Nano Lamb", Pooja, CSIR-CSIO, India

May: "Remembrance Poppy", Yana Suchikova and Serhiy Kovachov, Berdyansk State Pedagogical University, Ukraine

June: "Halo", José Manuel Martínez López, Química Tech Mexico ([3rd place winner of 2022 Nanoartography competition](#))

July: "MXene Lion King", Anupma Thakur, Nithin Chandran B S, Indiana University-Purdue University, Indianapolis, USA

August: "Bee eco-friendly", Yamini Mittal, CSIR-Institute of Minerals and Materials Technology, Bhubaneswar, India ([1st place winner of 2022 Nanoartography competition](#))

September: "The Tree of Life", Sharon Lim Xiaodai, National University of Singapore, Singapore ([2nd place winner of 2022 Nanoartography competition](#))

October: "MXene Dragon Cave", Vaishnavi Kanduri, Anupma Thakur, Bethany Wright, Nithin Chandran B S, Indiana University-Purdue University, Indianapolis, USA

November: "Lovely Fall Foliage", Bahareh Raisi, Zhibin Ye, Concordia University, Chemical and Materials Engineering Department, Canada

December: "Winter is Coming", Tetiana Hryhorchuk, Teng Zhang, Mohit Saraf, Drexel University, USA

Image on right side: "Rainbow Twist", Marley Downes, Kyle Matthews, Veronika Sedajova, Drexel University, USA ([Honorable Mention winner of 2022 Nanoartography competition](#))

The 2022 NanoArtography Competition was sponsored by A.J. Drexel Nanomaterials Institute, Drexel University's Department of Materials Science and Engineering, Materials Today, Nanotechnology World Association, and IUPUI Integrated Nanosystems Development Institute.

For more information about DNI check:

nano.materials.drexel.edu

Designed by ArminVahidMohammadi, Jamie Banks