

2D MXenes

10 YEARS LATER

MXene Conference 2020

August 3rd - 7th, 2020

Drexel University, Philadelphia, PA, USA

Preceded by MXene Synthesis and Characterization Courses
on July 27th - 31st, 2020.



Program



Chair

Michel W. Barsoum

Distinguished Professor
Materials Science and Engineering Department
Drexel University
Email: barsoumw@drexel.edu
Phone: 215-895-2338



Co-Chair

Yury Gogotsi

Distinguished University and Charles T. and Ruth M. Bach Professor
Director, A.J. Drexel Nanomaterials Institute
Materials Science and Engineering Department
Drexel University
Email: gogotsi@drexel.edu
Phone: 215-895-6446



Event Manager

Danielle Kopicko

Associate Director
A.J. Drexel Nanomaterials Institute
Drexel University
Email: dt372@drexel.edu
Phone: 215-895-1768

Monday, August 3rd, 2020 | 8:00 AM - 11:30 PM (EST)

Topic: Synthesis, Structure, and Properties

Session Chair: Michel W. Barsoum, Drexel University, USA

8:00 AM EST – 9:30 AM EST

Opening Remarks:

M. W. Barsoum, S. Walker, A. Saunders, Drexel University, USA

Plenary Speaker:

Johanna Rosén, Linköping University, Sweden

Title: “Expanding the structural and elemental space of MAX phases and MXenes”

9:30 AM EST – 11:30 AM EST

Keynote Speakers:

Mohammad Khazaei, NIMS, Japan

Title: “Charge injection effects on exfoliation possibility of MAX phases and actuation properties of 2D MXenes”

Qing Huang, NIMTE, CAS, China

Title: “Exploration of novel MAX phases and their derived MXene via A-site replacement reaction in molten salts”

Garritt Tucker, Colorado School of Mines, USA

Title: “Probing the atomic-scale origins of strength and deformation of MXene materials: on new atomistic modeling methods and approaches”



Program

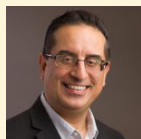
Tuesday, August 4th, 2020 | 8:00 AM - 11:30 PM (EST)

Topic: Electronic and Medical Applications

Session Chair: Michael Naguib, Tulane University, USA

8:30 AM EST – 9:30 AM EST

Plenary Speaker:

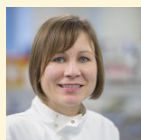


Husam Alshareef, KAUST, Saudi Arabia

Title: "MXetronics: MXenes for electronic and sensing applications"

9:30 AM EST – 11:30 AM EST

Keynote Speakers:



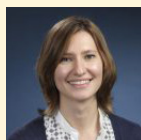
Susan Sandeman, Brighton, UK

Title: "MXenes and the inflammatory response to life threatening infection"



Thierry Ouisse, LMGP, INP-Grenoble, France

Title: "MAX to MXenes: why are single crystals useful"



Lyubov Titova, WPI, USA

Title: "Time-resolved terahertz spectroscopy of MXenes: microscopic conductivity and photoexcited carrier dynamics"

Wednesday, August 5th, 2020 | 8:00 AM - 13:00 PM (EST)

Topic: Chemistry-Processing-Properties Relationships

Session Chair: Steven May, Drexel University, USA



8:00 AM EST – 9:30 AM EST

Plenary Speaker:

Michael Naguib, Tulane University, USA

Title: "Role of intercalation in MXenes processing and performance"

9:30 AM EST – 11:30 AM EST

Keynote Speakers:

Babak Anasori, IUPUI, USA

Title: "Double transition metal MXenes, tuning MXenes properties from inside"

Vadym Mochalin, Missouri S&T, USA

Title: "Insights into MXene chemistry and its use for application development"

Miladin Radovic, Texas A&M, USA

Title: "Improving yield of MXene synthesis and their oxidation resistance"

11:30 AM EST – 12:00 PM EST: Featured Talk

Lynnette D. Madsen, NSF, USA

Title: "Nurturing new research discoveries and fostering development and commercialization"

12:00 AM EST – 13:00 PM EST

Commercialization and Investment Panel

Moderator: Shintaro Kaido, Drexel University, USA

Representatives from NSF, Heritage Group Ventures,
Osage University Partners, Prime Movers Lab



Program

Thursday, August 6th, 2020 | 8:00 AM - 11:30 PM (EST)

Topic: Energy Related Applications, from Modeling to Implementation

Session Chair: Ekaterina Pomerantseva,
Drexel University, USA

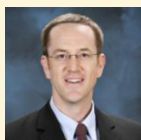


8:30 AM EST – 9:30 AM EST

Plenary Speaker:

Paul Kent, Oak Ridge National Lab, USA

Title: "Tracking ion intercalation into layered Ti_3C_2 MXene films across length scales"



9:30 AM EST – 11:30 AM EST

Keynote Speakers:

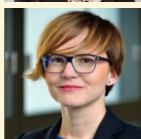
Pooi See Lee, Nanyang Tech. University, Singapore

Title: "Highly responsive MXene soft actuator"



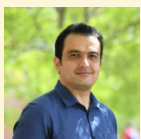
Aleksandra Vojvodic, University Penn, USA

Title: "Chemistry and electrocatalysis of nano-structured carbides, nitrides and oxides"



Majid Beidaghi, Auburn University, USA

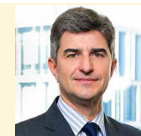
Title: "Assembling multilayered and heterolayered MXene electrodes for energy storage"



Friday, August 7th, 2020 | 8:00 AM - 11:30 PM (EST)

Topic: Applications of MXenes

Session Chair: Yury Gogotsi, Drexel University, USA



8:00 AM EST – 9:30 AM EST

Keynote Speakers

Guoxiu Wang, UTS, Australia

Title: "The applications of MXenes for energy conversion and storage"



Chong Min Koo, KIST, Korea

Title: "Anomalous absorption of electromagnetic waves by 2D transition metal carbonitride Ti_3CNT_x (MXene)"



Bin Xu, BUCT, China

Title: "MXene-based materials and electrodes for energy storage"



9:30 AM EST – 11:30 AM EST

Future of MXene Research and Applications Panel

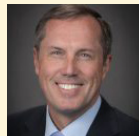
Moderator: Yury Gogotsi, Drexel University, USA

Panelists:

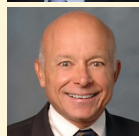
Takeshi Torita,
Murata Manufacturing Co., Ltd., Japan



Terrance Barkan,
The Graphene Council, USA



Michel W. Barsoum,
Drexel University, USA



Program

Poster Presentations

Monday, August 3rd, 2020 | Topic: Synthesis, Structure, and Properties

Anita Wojciechowska	Warsaw University of Technology	<i>"Insight into the interactions of 2D Ti_3C_2 and Ti_2C MXenes with collagen"</i>
Asia Sarycheva	Drexel University	<i>"Raman spectroscopy of $Ti_3C_2T_x$"</i>
Deependra Parajuli	Andhra University	<i>"Synthesis and Topological Analysis of $M_2'M_x$ "Xene Oxides"</i>
Shuohan Huang	Missouri S&T	<i>"Investigating Chemical Reactivity of MXenes Using Gas Analysis"</i>

Tuesday, August 4th, 2020 | Topic: Electronic and Medical Applications

Emma Ward	University of Brighton	<i>"$Ti_3C_2T_x$ in Adjustable Focus, Implantable Lens Design"</i>
Geetha Valurouthu	Drexel University	<i>"Tunable Electrochromic Behavior in Titanium-Based Mxenes"</i>
Grace Cooksley	University of Brighton	<i>"Optoelectronic Nanomaterials to Reduce the Complications Associated with Cataract Surgery"</i>
Ji Liu	Trinity College of Dublin	<i>"$Ti_3C_2T_x$ MXene foams toward electromagnetic interference shielding"</i>
Mykola Seredych	Drexel University	<i>"MXene Sorbents for Removal of Uremic Toxins from Dialysate"</i>
Natalia Noriega	University of Brighton	<i>"MXenes as a potential biosensing platform for detection of ophthalmic biomarkers"</i>
Nicolette Driscoll	University of Pennsylvania	<i>"Two-Dimensional Ti_3C_2 MXene for High-Resolution Neural Interfaces"</i>

Wednesday, August 5th, 2020 | Topic: Chemistry-Processing-Properties Relationships

Jason Lipton	New York University	<i>"Scalable, highly conductive, and micropatternable MXene films for enhanced EMI Shielding"</i>
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Thursday, August 6th, 2020 | Topic: Energy Related Applications, from Modeling to Implementation

Agnieszka Jastrzębska	Warsaw University of Technology	<i>"Juggling surface charges of 2D Niobium Carbide Mxenes for a reactive oxygen species scavenging and effective targeting of the malignant melanoma cell cycle into programmed cell death"</i>
Davi Marcelo Soares	Kansas State University	<i>"MXene Nanosheets as Alkali Metal-Ion Battery Electrodes: Initial Studies"</i>
Muhammad Ihsan Ul Haq	HKUST	<i>"Ti_2C MXene for sodium metal batteries"</i>
Shuangshuang Zhao	Jilin University, Drexel University	<i>"Flexible $Nb_4C_3T_x$ Film with Large Interlayer Spacing for High-Performance Supercapacitors"</i>
Varun Natu	Drexel University	<i>"Crumpled MXene as Anodes in Na-ion batteries"</i>
Xuehang Wang	Drexel University	<i>"Solvents' Influence on Charge Storage in 2D Titanium Carbide"</i>

Friday, August 7th, 2020 | Topic: Chemistry-Processing-Properties Relationships

Magdalena Birowska	University of Warsaw	<i>"Surface-related Features Responsible for Cytotoxic Behavior of Mxenes Layered Materials Predicted with Machine Learning"</i>
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All posters will be available to view throughout the conference.

Poster presenters will also participate in Q&A sessions on their scheduled dates from 11:30 AM to 12:30 PM EST

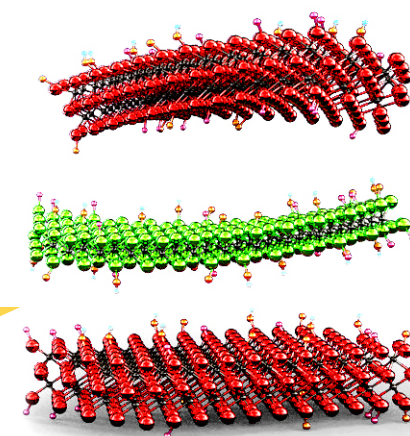


Courses

Experienced researchers, industry professionals, and students are all welcome to partake in these in-depth courses preceding the MXene Conference.

Cost:
\$300 per course
\$500 for both courses

Registration Deadline: July 24th, 2020 at 5 PM EST
[Register by Clicking Here](#)



MXenes Synthesis Course:

This course will introduce researchers to MXene synthesis best practices. Course attendees will receive detailed instruction as well as laboratory tutorials on how to synthesize MXenes. Participants will also learn about common mistakes encountered during MXene synthesis and receive course materials to guide their future research. This course is a great resource for researchers new to the MXene field as well as current MXene researchers who want to further advance their skill set.

Schedule: July 27th and July 28th, 2020
7:30 AM EST – 12 PM EST

MXenes Characterization Course:

In this course, we will cover characterization of MXene powders, colloidal solutions, single flakes and films by Raman spectroscopy, electron microscopy, UV-vis, XPS and other techniques. Experienced researchers will teach you how to determine the quality, flake size, and delamination of MXenes on the example of $\text{Ti}_3\text{C}_2\text{T}_x$. Sample preparation and elimination of measurement artifacts will be discussed in detail. Interpretation of Raman, UV-vis and XPS spectra of various MXenes will be provided. Bring your spectra and images and discuss them with our experts.

Schedule: July 29th and July 30th, 2020
7:30 AM EST – 12 PM EST

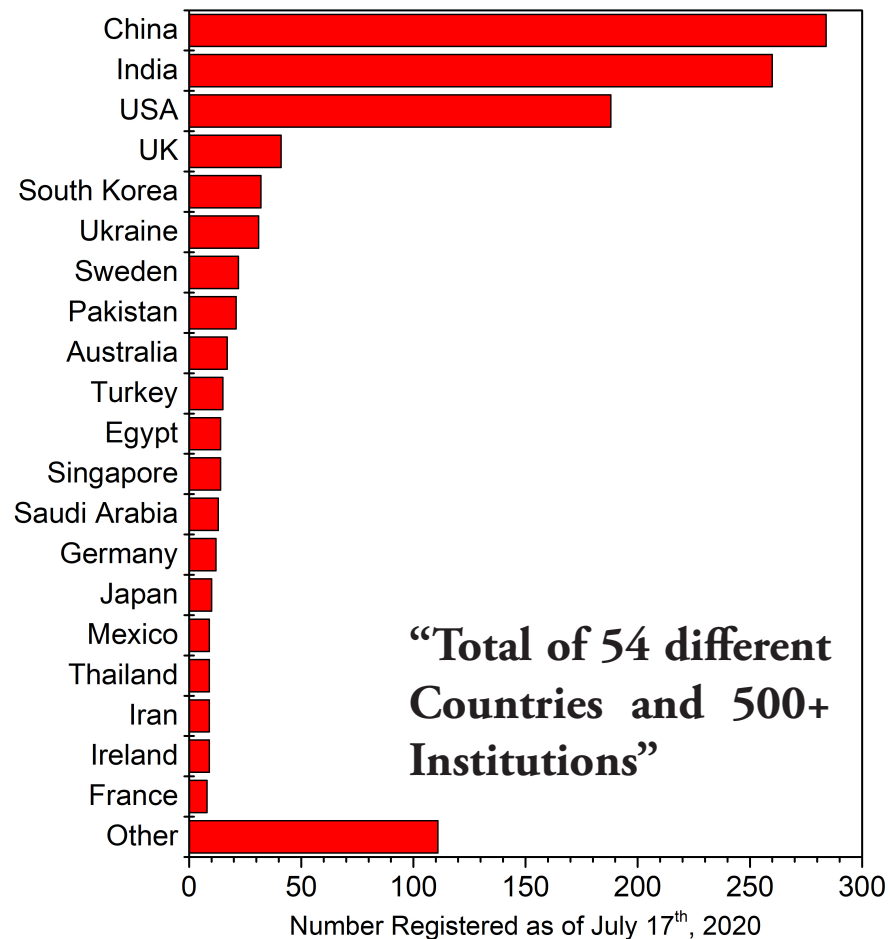


Statistics

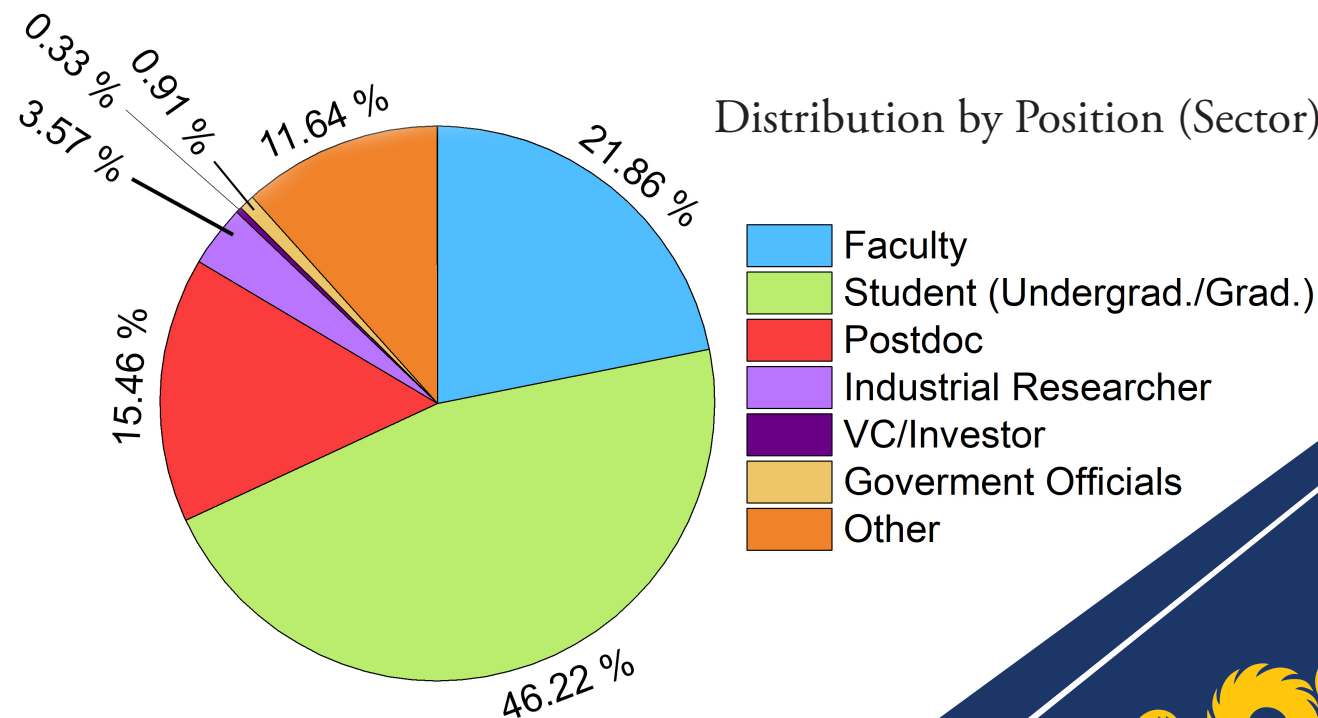
Total registered as of July 21st, 2020:

1400+

Distribution by Country



Distribution by Position (Sector)



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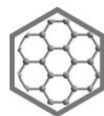
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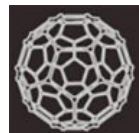
**The
Graphene
Council**

Cell Reports
Physical Science

A Cell Press journal

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C Journal of
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