

MXene

The Next Horizon

The 4th International Conference at the University of Chicago

Meeting Schedule

Overview of Topics and Speakers

August 20, 2026

Morning: MXene Synthesis – Surface Chemistry of MXenes

Afternoon: MXene Synthesis & Stability –

Composites & Manufacturing – MXene Bioelectronics –
Theoretical Studies of MXenes

Plenary Speakers: Johanna Rosen – Babak Anasori – Dmitri Talapin

August 21, 2026

Morning: Water & Desalination – Energy & Electrocatalysis

Afternoon: MXene Applications – Advancements in MXene
Characterization – MXenes for Health Applications –
Theoretical Studies of MXenes

Plenary Speakers: Alicia An – Mohammad Zarifi – Chong Min Koo

August 22, 2026

Morning: MXene Applications – Advancements in
MXene Characterization

Plenary Speaker: Yury Gogotsi

Working Groups

Synthesis

Yury Gogotsi

Surface Chemistry

Dmitri Talapin

**Biomedical
Applications**

Maksym Pogorielov
Lucia Gemma Delogu

Manufacturing

Kyle Matthews
Babak Anasori

**Energy Storage,
Conversion,
and the
Environment**

John Anderson

**Electronics,
Sensing, and
Optics**

Brian C. Wyatt

August 20, 2026

Kent Chemical Laboratory, First Floor

8 – 9 AM	Registration				
	Kent 107			Kent 120	
9 - 9:15 AM	Opening Remarks: Stuart Rowan, University of Chicago				
15 - 9:45 AM Plenary	Johanna Rosen	Towards scalable and sustainable methods for MXene synthesis from theoretical and experimental perspectives			
15 - 10:25 AM	Hee-Tae Jung	Mechanistic Insights into Etching and Spontaneous Delamination of MXenes		Young-Hwan Kim	Molecular Inorganic Chemistry on MXene Surfaces
Invited	Jingsong Huang	Enabling a panoramic view of MXenes via an atomic coordination-based design strategy		Jongyoun Kim	Organic Hybridization of Two-Dimensional Halide-Rich Molybdenum Carbide MXene
25-10:45 AM	Coffee Break				
45-11:25 AM Invited	Konstantin Klyukin	Atomistic Insights into Low-Dimensional Materials Synthesis by Selective Etching		Francisco Lagunas Vargas	Gold Nanoparticle Formation on Two-Dimensional MXene Supports
	Majid Beidaghi	Advances in Rapid MAX Phase and MXene Synthesis		Krutarth Kamath	Organic-inorganic MXene hybrid: Bridging the gap between 2D materials and high-temperature ceramics
25-11:40 AM Flash	Ikel Hernandez Casillas	MXene Synthesis via Selective Gas-Phase Etching of MAX Phases		Marley Downes	Investigation of the Inverse Chelate Effect
	Noah Mason	Direct Synthesis of MXenes from Metal Scrap		Alex Krupinski	Organically-Functionalized MXenes: A New Frontier in Catalysis
	Zhonghe Helen Qin	Synthesis of High-Entropy MXene via Lewis Acidic Molten Salt Etching		Isak Jatoi	Solution-phase NMR of Colloidal MXenes
40-12:10 PM Plenary	Babak Anasori	Expanding the Compositional Space and Definition of MXenes			
10 - 1:15 PM	Working Lunches in Topical Areas				
15 - 1:45 PM Plenary	Dmitri Talapin	Inorganic, Organic and Organometallic Chemistry of MXenes			
45-2:45 PM Invited	Pratiksha Thombre	Thermodynamic Stabilization of MXenes Beyond Conventional Stability Limits		Raghav Garg	Building Biomimetic Bioelectronics using Ti ₃ C ₂ T _x MXene
	Vadym N. Mochalin	MXene Chemistry: Fundamentals and Applications		Flavia Vitale	Engineering MXene bioelectronics for sensing, treating, and restoring human health
	Michael Naguib	Engineering MXenes and Their Hybrids for Targeted Performance and Their Scalable Manufacturing		Mohammad Arjmand	High-resolution extrusion printing of MXene-based inks for wearable human motion monitoring and electromagnetic interference shielding
45 - 2:55 PM Flash	Savannah Pas	Molten Salt Etching Mechanism of Vanadium Carbide MXenes		Ankitha Menon	Simultaneous Sensing of Umami-Enhancing Nucleotides: A First-of-Its-Kind Nb ₂ CT _x Mxene Electrochemical Platform
	Veysel Emre Ozgule	Molten-salt-assisted route to mixed-metal magnetic MBene-like nanosheets from a Fe-Mn 212 MAB precursor		Dana Cohen-Gerassi	Conductive Peptide-Based MXene Hydrogel as a Piezoresistive Sensor
55-3:10 PM	Coffee Break				
10-4:30 PM Invited	Zhongpeng Lyu	Structural Order Engineering in Ti ₃ C ₂ T _x MXene Nanocomposites for printed RF Devices			
	Surojit Gupta	Design and Engineering of Engineering MAX phase Particulates for Advanced Composites		De-En Jiang	Revisit of Bare MXenes and Hydrogen Termination
	Haozhe Wang	High Performance MXenes Fabricated by Atomic Layer Engineering for Soft Actuator Applications		Hendrik Heinz	Unlocking Predictive Design of MXene-Based Materials Through Molecular Simulation
	Dhriti Nepal	Topology to Function: Thermomechanical and Multifunctional Vitrimer MXenes Nanocomposites		Steven Goldy	3D Defect Topology and Vacancy Interactions in MXenes
30-4:40 PM Flash	Xingjian Hu	Ti ₃ C ₂ T _x Composites as a Tunable Platform for Light-Driven Actuation and Untethered Flight		Hessam Shahbazi	Quantum Diagonalization-Assisted Mapping of Reaction Pathways on MXene Electrocatalysts for C-C Coupling in CO ₂ Reduction
	Parth Khandagale	Electrically conductive binder-free MXene-based optical up-conversion composite films		Vikash Khokhar	Ammonia-assisted delamination of halide-terminated MXenes
0 - 5:15 PM	Concluding Panel: Scaling and Commercialization of MXenes				
	Gordon Center for Integrative Sciences, Third Floor Atrium				
5 - 6:00 PM	Poster session and cocktails				
0 - 7:00 PM	Dinner				
0 - 8:00 PM	Poster session and cocktails, concluding				

August 21, 2026

	Kent Chemical Laboratory, First Floor			
8 – 9 AM	Registration			
	Kent 107		Kent 120	
9 - 9:15 AM	Opening Remarks and a Note from Our Sponsors: Anton Paar			
9:15 - 9:45 AM Plenary	Alicia An	MXene Membranes for Desalination, Hydrogen, and Lithium Extraction		
9:45 - 10:30 AM Invited	Khaled Mahmoud	Bioinspired MXene Membranes: Harnessing Preferential Ion Intercalation for Next-Generation Desalination and Resource Recovery	Masashi Okubo	MXenes for electrochemical energy storage devices
	Seunghyun Hong	MXene in Water, Energy, and Mineral Nexus	Anupma Thakur	Designer Chemistry Control of Two-dimensional MXenes for Hydrogen Electrocatalysis
10:30-10:45 AM	Coffee Break			
10:45-11:25 AM Invited	Yuan Zhang	Water-mediated ion selectivity in 2D MXene channels	Sixbert Picard Muhoza	Application-Directed MXene Customization for Next-Generation Electrochemical Technologies
	M. Clelia Righi	Machine Learning-driven molecular dynamics to probe MXene stability in water and tribological performance	Teng Zhang	Morphology and defect engineering of MXenes for high performance energy application
11:25-11:40 AM Flash	Aarthi Kannan	All solid-state Mo ₂ TiC ₂ T _x MXene for Electrochemical Phosphate Sensors	Ai Watanabe	Applying MXene Nb ₂ CT _x for Negative Electrode Materials of All-Solid-State Batteries
	Lucy Plant	MXene-Based Photothermal Desalination for Off-Grid Freshwater Generation	M. Sai Bhargava Reddy	MXene-Driven Lithium-Ion Batteries for Extreme Temperature Operation
	Yash Athreya	Binder-free electrodes made of scrolled titanium carbonitride MXene for high-performance hybrid capacitive deionization	Poulomi Nandi	Carbon-Nitrogen Synergy Governing HER and OER Active Sites in Mo-Based MXenes
11:40-12:10 PM Plenary	Mohammad Zarifi	MXene-Enabled Electromagnetic Platforms for Adaptive Sensing and Communication from Smart Antennas to Intelligent Robotic Skins		
12:10 - 1:15 PM	Working Lunches in Topical Areas			
1:15 - 1:45 PM Plenary	Chong Min Koo	MXenes for Multispectral Electromagnetic Shielding, Absorbing, and Stealth Applications		
1:45-2:45 PM Invited	Joshua Uzarski	MXenes for US Defense Applications: Current Developments and Future Needs	Maksym Pogorielov	MXenes as antibacterial agents: limitations and perspectives
	Bhoj Gautam	Double-Transition Metal Mo ₂ Ti ₂ C ₃ MXene-Polyaniline composites for High-Performance Supercapacitors	Sanjiv Dhingra	Tantalum carbide MXene quantum dots for cardiac regenerative medicine
	Parikshit Sahatiya	MXene based Flexible and Wearable Devices and System	Acelya Yilmazer	MXenes as Multifunctional Platforms for Next-Generation Cancer Therapy
2:45 - 2:55 PM Flash	Sachin Kumar Yadav	Ti ₃ C ₂ T _x MXene-Derived Metal Organic Frameworks for Humidity-Responsive Soft-Bionics Actuator	Ankit Singh	Graphene-MXene Heterostructure for Biomedical and Environmental Antimicrobial Applications
	Peshal Karki	Properties Engineering of Mo ₂ Ti ₂ C ₃ T _x Mxene Using Gamma Irradiation	Leonardo M. Leidens	Surface-Termination-Engineered MXene Electronic Tongues for Sensing
2:55-3:10 PM	Coffee Break			
3:10-4:30 PM Invited	Naresh Osti	Neutron Studies of MXenes	Aleksandra Vojvodic	Designing chemistry of MXenes using (in)organic functional groups
	Pawel Michalowski	From Flat Flakes to Random Networks: Does MXene Complexity Really Limit SIMS?	Yamilee Morency	An extensive analysis of the effect of C/N X sublattice composition on MXene chemistry
	Per Persson	Exploring the MXene structure and surface terminations by electron microscopy	Zahra Fakhraai	The strong influence of terminal groups on MXene optoelectronic properties
	Changhoon Park	Pushing the Limits of Plasmon Confinement in MXenes	Steven Spurgeon	The Hidden Third Dimension of 2D Materials: AI-Guided Discovery of Point Defect Topologies in MXenes
4:30-4:40 PM Flash	Reagan A. Beers	Probing the (Electro)chemical Reactivity of V ₂ CT _x Electrodes through Electrochemical Methods and Ex Situ Surface Analysis	Sanguk Han	Realization of Organometallic MXenes through Installation of Organic ligands
	Fatemeh Karimi	Probing Termination Registry and Surface Functionalization in MXenes by Electron Microscopy and Spectroscopy	Bo Spinnler	Ensemble Effects in Multi-metallic MXenes for Electrochemistry - A Case study of Hydrogen Evolution
4:40 - 5:15 PM	Concluding Panel: Translation Opportunities for MXenes in Energy, Defense, and Healthcare			
	Gordon Center for Integrative Sciences, Third Floor Atrium			
5:15 - 6:00 PM	Poster session and cocktails			
6:00 - 7:00 PM	Dinner			
7:00 - 8:00 PM	Poster session and cocktails, concluding			

August 22, 2026

Kent Chemical Laboratory, First Floor

8 – 9 AM

Registration

Kent 107

Kent 120

9 - 9:15 AM

Opening Remarks and Notes from Our Sponsors: **Murata Manufacturing** and **MXene Dynamics**

9:15 - 9:55 AM
Invited Talks

Lyubov Titova

Electronic and Photothermal Properties of MXene-Silk Composite Films

Abdoulaye Djire

Unveiling Interphase Solvation Dynamics on MXenes via Operando FTIR Spectroscopy

Anirudha Sumant

MXenes: A new emerging 2D solid lubricant

Alexander Sinitskii

Revealing the intrinsic properties of MXenes

9:55-10:10 AM
Flash Talks

Mine Ucak-Astarlioglu

MXene-Reinforced Composites for Defense Systems

Jamal Alhourani

Confined Water Induced EMI Absorption in MXene films

Sameera K Arachchige

Rare-Earth-modified luminescent two-dimensional nanosheets derived from oxidized Mo_2CT_x MXene

Givi Kadagishvili

Exploring the Infrared Optical Properties of MXenes

Nithin Chandran BS

Effect of Oxygen Substitution in the X Sublattice of $\text{Ti}_3\text{C}_2\text{T}_x$ MXene on the Performance of Triboelectric Nanogenerators

Mohsen Bagheritabar

Breaking Inversion Symmetry in MXenes: A Multiscale Framework for Second-Order Nonlinear Optics

10:10-10:25 AM

Coffee Break

10:25-11:00 AM
Plenary

Yury Gogotsi

Concluding Address

11:00 AM - 12:00 PM

Working Groups Report Out and Awards

12:00 - 1:15 PM

Lunch and Farewell

With Gratitude to Our Sponsors

PLATINUM



Anton Paar

GOLD



SILVER



BRONZE



AND ASSISTANCE FROM

