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Course

MXene

February 2-6, 9 AM- 2 PM EST | March 2-6, 7 PM - 12 AM EST

Day 1 – February/March 2nd	Instructor	Time Feb (EST)	Time Mar (EST)
<i>Welcome and Course Introduction</i>	Prof. Yury Gogotsi	9:00 - 9:15	7:00 - 7:15
Big Picture and Course Outline	Prof. Goknur Buke	9:15 - 9:45	7:15 - 7:45
Top-Down Approaches: Fundamentals of Etching	Dr. Ben Davis	9:45 - 10:30	7:45 - 8:30
Delamination	Prastuti Upadhyay	10:30 - 11:00	8:30 - 9:00
Synthesis Best Practices	Lucy Plant	11:00 - 11:30	9:00 - 9:30
30 Minute Break			
Acid Etching and Delamination Demonstration of Etching/Delamination (Synthesis of Ti ₃ C ₂ T _x)	Ikel Hernandez	12:00 - 12:45	10:00 - 10:45
Molten Salt Etching and Delamination	Dr. Teng Zhang	12:45 - 1:30	10:45 - 11:30
Bottom-Up Growth of MXenes: Gas-Phase (CVD) Route	Dr. Ben Davis	1:30 - 2:00	11:30 - 12:00

Day 2 – February/March 3rd	Instructor	Time Feb (EST)	Time Mar (EST)
MXenes Beyond $\text{Ti}_3\text{C}_2\text{T}_x$	Benj Chacon	9:00 - 9:45	7:00 - 7:45
Colloidal MXenes: Dispersion, Size Selection, and Stability	Jamie Fitzpatrick	9:45 - 11:00	7:45 - 9:00
50 Minute Break			
Thin-Film Processing and Device-Ready MXene Architecture	Dr. Changhoon Park	11:50 - 1:30	9:50 - 11:30
<i>Key Takeaways of Synthesis and Preview Characterization</i>	Prof. Yury Gogotsi	1:30 - 2:00	11:30 - 12:00

Day 3 – February/March 4th	Instructor	Time Feb (EST)	Time Mar (EST)
X-ray Diffraction of MAX Phases and MXenes	Dr. Yuan Zhang	9:00 - 10:00	7:00 - 8:00
Electron Microscopy (SEM, TEM) & X-ray Computed Tomography of MXenes	Bitra S. Mohammadlou	10:00 – 11:00	8:00 - 9:00
50 Minute Break			
X-ray Photoelectron Spectroscopy (XPS) of MXenes	Dr. Jongyoun Kim	11:50 – 12:40	9:50 - 10:40
Optical Characterization of MXenes	Dr. Changhoon Park	12:40 - 1:30	10:40 - 11:30
Raman Spectroscopy of MAX Phases and MXenes	Deniz Çakır	1:30 - 2:00	11:30 - 12:00

Day 4 – February/March 5th	Instructor	Time Feb (EST)	Time Mar (EST)
<i>Key Takeaways of Characterization and Preview Applications</i>	Prof. Yury Gogotsi	9:00 – 9:40	7:00 – 7:40
Electrochemistry of MXenes	Dr. Yuan Zhang	9:40 – 10:40	7:40 - 8:40
MXenes for Energy Storage	Sokhna Dieng	10:40 – 11:20	8:40 - 9:20
50 Minute Break			
MXenes in Catalysis	Dr. Jongyoun Kim	12:20 – 1:20	10:20 - 11:20
MXenes for Water Desalination and Actuation	Yash Athreya	1:20 – 2:00	11:20 - 12:00

Day 5 – February/March 6th	Instructor	Time Feb (EST)	Time Mar (EST)
EMI Shielding and MXene-Based Composites	Jamal AlHourani	9:00 – 10:00	7:00 - 8:00
MXenes in (Opto)electronics	Dr. Changhoon Park	10:00 – 11:00	8:00 - 9:00
Biomedical Applications of MXenes	Benj Chacon	11:00 -12:00	9:00 - 10:00
50 Minute Break			
Live Q&A and Closing Remarks	Everyone, Prof. Yury	12:50 – 2:00	10:50 - 12:00



Professor Yury Gogotsi

Distinguished University and Charles T. and Ruth M. Bach Professor
Director, A.J. Drexel Nanomaterials Institute
Email: gogotsi@drexel.edu

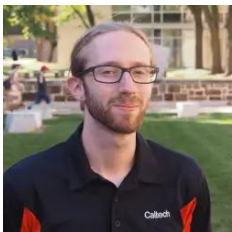
- Welcome and Course Introduction
- Key Takeaways of Characterization and preview Applications



Prof. Goknur Buke

Research Professor
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- Big Picture and Course Outline



Dr. Ben Davis

Postdoctoral Researcher
A.J. Drexel Nanomaterials Institute
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- Top-Down Approaches:
Fundamentals of Etching
- Bottom-Up Growth of MXenes: Gas-Phase (CVD) Routes



Prastuti Upadhyay

Research Assistant
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- Delamination





Lucy Plant

Research Assistant
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- Synthesis Best Practices



Ikel Hernandez

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- Acid Etching and Delamination.
Demonstration of
Etching/Delamination (Synthesis of
 $\text{Ti}_3\text{C}_2\text{T}_x$)



Teng Zhang

Postdoctoral Researcher
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- Molten Salt Etching and
Delamination

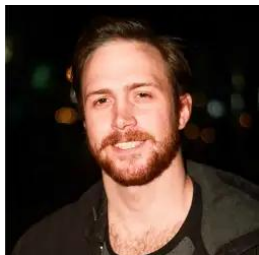


Benjamin Chacon

Ph.D Student
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- MXenes Beyond $\text{Ti}_3\text{C}_2\text{T}_x$
- Biomedical Applications
of MXenes





James B. Fitzpatrick

Ph.D Student
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- Colloidal MXenes: Dispersion, Size Selection, and Stability



Dr. Changhoon Park

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- Thin-Film Processing and Device-Ready MXene Architectures
- Optical Characterization of MXenes
- MXenes in (Opto)electronics



Bitá Soltan Mohammadlou

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- Electron Microscopy of MXenes (SEM, TEM, CT)
-





Deniz Çakir

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Raman Spectroscopy of MAX Phases
and MXenes



Dr. Yuan Zhang

Postdoctoral Researcher
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- Electrochemistry of MXenes
- X-ray Diffraction of MAX Phases and MXenes
-



Sokhna Dieng

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MXenes for Energy Storage





Dr. Jongyoun Kim

Postdoctoral Researcher
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- MXenes in Catalysis
- X-ray Photoelectron Spectroscopy (XPS) of MXenes
-



Yash Athreya

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- MXenes for Water Desalination and Actuation



Jamal Alhourani

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- EMI Shielding and MXene-Based Composites



Course Program Manager



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