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MXene Course

February 19th - February 23rd, 2024

9:00 AM - 2:00 PM (EST)

MXene Course

Program

Day 1 - February 19, 2024	Instructor	Time (EST)
Introduction to MXenes Course (Synthesis)	Prof. Yury Gogotsi	09:00 AM - 09:30 AM
Fundamentals of Etching/Delamination	Dr. Benjamin Davis	09:30 AM - 10:30 AM
Synthesis Best Practices	Marley Downes	10:30 AM - 11:00 AM
11:00 – 12:00 Break		
Demonstration of Etching/Delamination (Synthesis of $Ti_3C_2T_x$)	Deniz Çakir	12:00 PM - 12:45 PM
Synthesis of Other MXenes Beyond $Ti_3C_2T_x$	Benjamin Chacon	12:45 PM - 01:30 PM
Alternative Etching and Delamination Techniques for MXene Synthesis	Teng Zhang	01:30 PM - 02:00 PM

Day 2 - February 20, 2024	Instructor	Time (EST)
Introduction to Processing of MXene Dispersions	James Fitzpatrick	09:00 AM - 09:30 AM
Thin Films Processing	Tetiana Hryhorchuk	09:30 AM - 10:30 AM
MXene Processing - From Fibers to Textiles	Lingyi Bi	10:30 AM - 11:15 AM
11:15 – 12:15 Break		
Stability of MXene Dispersions, Composites, and Films	Jamal AlHourani	12:15 PM - 12:45 PM
Size Selection of MXene / Dynamic Light Scattering (DLS): Size and Zeta Potential	Lingyi Bi	12:45 PM - 01:45 PM
Next Day Highlights - Introduction to MXene Characterization	Prof. Yury Gogotsi	01:45 PM - 02:00 AM

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Program

Day 3 - February 21, 2024	Instructor	Time (EST)
X-ray Diffraction (XRD) Characterization of MAX Phases and MXene	Asaph Lee	09:00 AM - 10:00 AM
X-ray Photoelectron Spectroscopy (XPS) of MXenes	Teng Zhang	10:00 AM - 11:00 AM
11:00 – 12:00 Break		
Optical Properties of MXenes	Tetiana Hryhorchuk	12:00 PM - 12:30 PM
Raman Spectroscopy of MAX and MXene	Dr. Ruocun (John) Wang	12:30 PM - 01:30 PM
Electronic/Magnetic Properties of MXenes	Teng Zhang	01:30 PM - 02:00 PM

Day 4 - February 22, 2024	Instructor	Time (EST)
EMI Shielding of MXenes and MXene Composites	Jamal AlHourani	09:00 AM - 09:30 AM
Optical and Electron Microscopy (SEM and TEM) of MXenes	Dr. Ruocun (John) Wang	09:30 AM - 10:00 AM
Atomic Force Microscopy (AFM) of MXenes	Dr. Stefano Ippolito	10:00 AM - 10:30 AM
10:30 – 11:30 Break		
Introduction to MXene Applications	Prof. Yury Gogotsi	11:30 AM - 12:00 PM
MXenes for Electronic/Optoelectronic Applications	Dr. Stefano Ippolito	12:00 PM - 01:00 PM
Biomedical Applications of MXenes	Benjamin Chacon	01:00 PM - 02:00 PM

MXene Course

Program

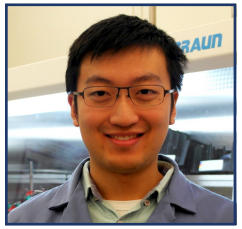
Day 5 - February 23, 2024	Instructor	Time (EST)
Electrochemistry and Energy Storage Applications of MXenes	Dr. Yuan Zhang, Sokhna Dieng	09:00 AM - 11:00 AM
MXene Applications Beyond Energy Storage	Dr. Yuan Zhang, Benjamin Chacon	11:00 AM - 12:00 AM
12:00 – 12:30 Break		
Q&A	All Instructors	12:30 PM - 01:45 PM
Closing Remarks	Prof. Yury Gogotsi	01:45 PM - 02:00 PM

MXene Course

Instructors

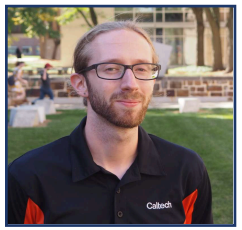
Professor Yury Gogotsi
Distinguished University and Charles T. & Ruth M. Bach Professor
Director, A.J. Drexel Nanomaterials Institute
Email: gogotsi@drexel.edu

- **Introduction and Opening Remarks**
- **Introduction to MXene Synthesis, Characterization, and Applications**



Dr. Ruocun (John) Wang
Research Associate I
A.J. Drexel Nanomaterials Institute
Email: jw3759@drexel.edu

- **Raman Spectroscopy of MAX and MXene**
- **Optical and Electron Microscopy (SEM and TEM) of MXenes**



Dr. Benjamin Davis
Postdoctoral Researcher
A.J. Drexel Nanomaterials Institute
Email: bd654@drexel.edu

- **Fundamentals of Etching/Delamination Stability of MXene**

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MXene Course

Instructors

Dr. Yuan Zhang
Postdoctoral Researcher
A.J. Drexel Nanomaterials Institute
Email: yz895@drexel.edu

- **Electrochemistry and Energy Storage Applications of MXenes**
- **MXene Applications Beyond Energy Storage**

Dr. Stefano Ippolito
Postdoctoral Researcher
A.J. Drexel Nanomaterials Institute
Email: si368@drexel.edu

- **Atomic Force Microscopy (AFM) of MXenes**
- **MXenes for Electronic/Optoelectronic Applications**

Asaph Lee
Ph.D. Student
A.J. Drexel Nanomaterials Institute
Email: asl338@drexel.edu

- **X-ray Diffraction (XRD) Characterization of MAX Phases and MXene**

Deniz Çakir
Ph.D. Student
A.J. Drexel Nanomaterials Institute
Email: dc3489@drexel.edu

- **Demonstration of Etching/ Delamination (Synthesis of $Ti_3C_2T_X$)**

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Instructors

Jamal AlHourani
Ph.D. Student
A.J. Drexel Nanomaterials Institute
Email: jia33@drexel.edu

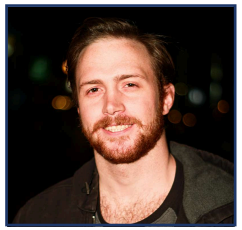
- **Stability of MXene Dispersions, Composites, and Films**
- **EMI Shielding of MXenes and MXene Composites**

Teng Zhang
Ph.D. Student
A.J. Drexel Nanomaterials Institute
Email: tz333@drexel.edu

- **Alternative Etching and Delamination Techniques for MXene Synthesis**
- **X-ray Photoelectron Spectroscopy (XPS) of MXenes**
- **Electron/Magnetic Properties of MXenes**

Benjamin Chacon
Ph.D. Student
A.J. Drexel Nanomaterials Institute
Email: bjc92@drexel.edu

- **Synthesis of Other MXenes Beyond $Ti_3C_2T_x$**
- **Biomedical Applications of MXenes**
- **MXene Applications Beyond Energy Storage**



James B. Fitzpatrick
Ph.D. Student
A.J. Drexel Nanomaterials Institute
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- **Introduction to Processing of MXene Dispersions**

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Instructors

Sokhna Dieng
Ph.D. Student
A.J. Drexel Nanomaterials Institute
Email: sd3623@drexel.edu

- **Electrochemistry and Energy Storage Applications of MXenes**

Tetiana Hryhorchuk
Ph.D. Student
A.J. Drexel Nanomaterials Institute
Email: th896@drexel.edu

- **Thin Film Processing**
- **Optical Properties of MXenes**

Lingyi Bi
Ph.D. Student
A.J. Drexel Nanomaterials Institute
Email: lb3277@drexel.edu

- **Size Selection of MXene / Dynamic Light Scattering (DLS): Size and Zeta Potential**
- **MXene Processing - From Fibers to Textiles**

Marley Downes
Lab Assistant
A.J. Drexel Nanomaterials Institute
Email: mvd37@drexel.edu

- **Synthesis Best Practices**

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Instructors

Course Program Manager

Jamie Banks
Operations Project Manager
A.J. Drexel Nanomaterials Institute
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