

cfaed Seminar Series

DATE: August 29, 2019
TIME: 3:00 PM – 4:30 PM
LOC: Seminar room HEM 219 (second floor)
Walther-Hempel-Bau
Mommssenstr. 4, 01069 Dresden



GUEST SPEAKER:

Prof. Yury Gogotsi

A. J. Drexel Nanomaterials Institute and Department of Materials Science and Engineering, Drexel University, Philadelphia, PA 19104, USA

TITLE:

“Electronic Properties of 2D Transition Metal Carbides and Nitrides (MXenes)”

ABSTRACT:

2D transition metal carbides and nitrides (MXenes) are a large family of 2D materials with more than 30 compositions experimentally synthesized and a few dozens more predicted to be stable and studied computationally. They benefit from their high electrical conductivity, wide range of optical properties, hydrophilic surface, and high mechanical strength. Because of those properties, they show promise in a wide a variety of applications from energy storage to photonics. In this talk, an overview of fundamental electronic properties of MXenes are presented and discussed. Specifically, the roles of intra- and inter-flake electronic conduction on the temperature-dependence of resistivity of MXenes will be discussed in detail. Moreover, systematic investigation of the roles of MXene composition, including the transition metals, the X elements (C and/or N), and surface terminations on their electronic and transport properties will be presented.

BIOGRAPHY:

Dr. Yury Gogotsi is Charles T. and Ruth M. Bach Chair Professor and Distinguished University Professor of Materials Science and Engineering at Drexel University in Philadelphia, USA. He also serves as Director of the A.J. Drexel Nanomaterials Institute. His research group works on 2D carbides and nitrides (MXenes), nanostructured carbons, as well as other nanomaterials for energy, water and biomedical applications. He has co-authored 2 books, 16 book chapters, about 700 journal papers, edited 14 books, and obtained more than 50 patents. He was recognized as Highly Cited Researcher in Materials Science and Chemistry (Web of Science) in 2014-2018. He has received numerous national and international awards for his research. He also serves on the MRS Board of Directors and acts as Associate Editor of ACS Nano.