SPRING 2023 CHEMISTRY SEMINAR SERIES

DR. JIAN WANG

Department of Chemistry and Biochemistry

Wichita University, Wichita, Kansas

HOST: DR. AKOPOV

ALL THOSE INTERESTED ARE WELCOME TO ATTEND

"Facile synthesis of two-dimensional (2D) materials to discover new compounds and stabilize metastable modifications"

Friday, March 10, 2023, 11:30 AM
Life Science Center II, Room 130

Abstract: Two-dimensional materials remain one of the hottest research fields for a few decades due to their emerging physical properties existing in a single atomic layer or a few atomic layers. After intensive research efforts, 2D materials started to find their applications in our daily life, such as in batteries, electronics, or even bulletproof vests. To turn on the functionalities of 2D materials, controlled synthesis of 2D materials is the first and most crucial step. In general, high-temperature solid-state reactions, solution-phase growth, vapor deposition, molecular-beam epitaxy (MBE) method, etc. were widely adopted to grow 2D materials. All these methods proved to be very successful to prepare 2D materials. But worth mentioning, many challenges such as requiring high energy, expensive instruments involved, easily producing thermodynamically stable phases, etc. remain and impede the broader applications of 2D materials. In this work, we will present facile synthesis methods for discovering a new phosphorus allotrope, violet-P11, via a low-temperature flux method and stabilization and growth of the metastable 6R-TaS2 phase. Violet-P11 is a large bandgap 2D semiconductor of Eg=~ 2 eV with good ambient stability. 6R-TaS2 is a metastable phase, which is not easily accessed by conventional synthetic methods.

Biographical Sketch: Dr. Jian Wang received his Ph. D degree in Materials Physics and Chemistry from Shandong University in 2013. From 2014- 2017, Dr. Wang moved to UC Davis working as a research associate. He received Postdoctoral Scholar Research Excellence Award when he worked at UC Davis. From 2017-2019, He moved to Iowa State University to work as a research associate, where he also received Postdoctoral Scholar Research Excellence Award. Dr. Wang joined the Department of Chemistry at Wichita State University in 2019. His research group is now focused on discovering novel inorganic functional materials.

Department of Chemistry
73 Warren Street, Olson Hall
Newark, New Jersey
https://sasn.rutgers.edu/chemistry

RUTGERS
UNIVERSITY | NEWARK