

## Education

- **Wayne State University** **Detroit, MI**  
*Ph.D. Physics* *2014 – Present*
  - **Wayne State University** **Detroit, MI**  
*M.Sc. Physics* *2017*
  - **Michigan State University** **East Lansing, MI**  
*B.Sc. Physics* *2014*
  - **Michigan State University** **East Lansing, MI**  
*B.Sc. Astrophysics* *2014*
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## Experience

- **Nano Fabrication & Electron Transport Laboratory** **Wayne State University, Detroit, MI**  
*Graduate Research Assistant* *2015 – Present*
    - Fabricate field-effect transistors using two-dimensional semiconductors to investigate their intrinsic transport properties.
    - Develop novel techniques for making low-resistance Ohmic contacts to a wide variety of two-dimensional semiconductors.
  - **National Institute of Materials Science** **Tsukuba, Ibaraki Prefecture, Japan**  
*Visiting Graduate Researcher, Summer Intern* *2017*
    - Investigate methods for surface modification of two-dimensional semiconductors for the use of creating a new low-resistance Ohmic contact strategy.
  - **Interational Course on Computational Physics** **Delft, The Netherlands & East Lansing, MI**  
*Undergraduate Researcher* *2014*
    - A Joint collaboration with Technische Universiteit Delft and Michigan State University involving the development of computational models of various physical systems to model interactions of materials and optimize employed techniques.
  - **Jenoptik Laser Technologies** **Brighton, MI**  
*Summer Intern* *2013*
    - Contributed in development of a user interface for laser welding machine that allows user manipulation of robotic end-arm tooling.
    - Incorporated microcontroller program via interfaced electronic devices and several developed algorithms to analyze physical data and feedback in real-time.
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## Selected Publications

1. “High Performance WSe<sub>2</sub> Phototransistors with 2D/2D Ohmic Contacts.” Tianjiao Wang, **Kraig Andrews**, Arthur Bowman, Tu Hong, Michael Koehler, Jiaqiang Yan, David Mandrus, Zhixian Zhou, and Ya-Qiong Xu. *Nano Letters* (xx)xx. 2018.
  2. “”
  3. “”
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## Selected Presentations

1. “Palladium Diselenide as a New Two-Dimensional Electronic Material Beyond Silicon.” **Kraig Andrews**, Arthur Bowman, Upendra Rijal, Amanda Haglund, David Mandrus, and Zhixian Zhou. Society of Vacuum Coaters TechCon, Orlando, FL. May 2018.

2. *"Improved On-Off in Ratio Black Phosphorus Field-Effect Transistors with True Ohmic Contacts."* **Kraig Andrews**, Arthur Bowman, Upendra Rijal, Michael Koehler, David Mandrus, and Zhixian Zhou. APS March Meeting, Los Angeles, CA. March 2018.
3. *"High Mobility Palladium Diselenide Field-Effect Transistors Using Heaving  $n$ -Doped Graphene Contacts."* Arthur Bowman, **Kraig Andrews**, Upendra Rijal, Amanda Haglund, David Mandrus, and Zhixian Zhou. APS March Meeting, Los Angeles, CA. March 2018.
4. *"Measuring the Barrier Height at Transition Metal Dichalcogenide Heterojunctions."* Upendra Rijal, Arthur Bowman, **Kraig Andrews**, Michael Koehler, David Mandrus, and Zhixian Zhou. APS March Meeting, Los Angeles, CA. March 2018.
5. *"High-Performance Top-Gated  $\text{WSe}_2$  Transistors with Two-Dimensional Ohmic Contacts."* **Kraig Andrews**, Upendra Rijal, Arthur Bowman, Hsun-Jen Chuang, Sagar Paduel, Michael Koehler, David Mandrus, and Zhixian Zhou. 41<sup>st</sup> Annual Symposium American Vacuum Society- Michigan Chapter, Ann Arbor, MI. May 2017.
6. *"Substrate Dependence of Hall and Field-Effect Mobilities in Few-Layer  $\text{MoS}_2$  Field-Effect Transistors."* Bhim Cham-lagain, Perera Meeghage, Hsun-Jen Chuang, Arthur Bowman, Upendra Rijal, **Kraig Andrews**, Joseph Klesko, Charles Winter, and Zhixian Zhou. APS March Meeting, Boston, MA, March 2016.

## Teaching Experience

Teaching Assistant, Wayne State University  
 Teaching Assistant, Michigan State University

Autumn 2014 – Winter 2018  
 Winter 2012 – Winter 2014

## Core Technical Skills

**Nanofabrication:** Atomic force microscopy (AFM), Electron beam lithography, Photolithography, Scanning electron microscopy (SEM), General clean room abilities (> 1000 hours), Physical vapor deposition (PVD), Electron beam deposition, Plasma etching, Reactive ion etching (RIE)

**Languages & Software:** C++, Fortran, Java, JavaScript, L<sup>A</sup>T<sub>E</sub>X, Python, shell script, Microsoft Office, Matlab, Mathematica

**Operating Systems:** OS X, Linux OS, Microsoft Windows