

Raymond Zhang

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EDUCATION

Drexel University

BS/MS in Materials Science and Engineering

Philadelphia, PA

Anticipated Graduation: June 2022

RESEARCH EXPERIENCE

Undergraduate Research Assistant, Materials Electrochemistry Group

Department of Materials Science and Engineering, Drexel University

Philadelphia, PA

April 2020 – Current

- Study the relationships between solvent selection and exfoliation parameters on the yield and morphology of liquid phase exfoliated bilayered vanadium oxide.
- Measure the electrochemical performance of exfoliated bilayered vanadium oxide flakes in cathodes for Li-ion batteries.
- Design strategies for self-assembly of 2D nanostructures into heterostructures for energy storage applications.
- Discovered electrochromic properties of vanadium oxide nanosheets suspended in NMP solvent.

Research Intern

Department of Chemistry, Drexel University

Philadelphia, PA

June – September 2018

- Experimented with a variety of bottom up deposition methods such as chemical vapor deposition, spin coating, and drop casting to fabricate amorphous red phosphorus thin films of different thicknesses.
- Coated red phosphorus thin films with different oxides such as TiO₂ and ZrO₂ to promote stability.

INDUSTRY EXPERIENCE

R&D Lab Technician, Heraeus Photovoltaics

Heraeus Precious Metals

Conshohocken, PA

April – September 2019

- Planned several DoE mixture design studies for tuning rheological properties of silver metallization paste through the optimization of solvent and polymer components in formulation for solar cell screen printing.
- Improved the solar cell efficiency of silver metallization paste against current product for customer by 0.74% through screen printing on 23 μm opening screen using statistical analysis and modeling.
- Supported method development of viscosity testing with a new viscometer by improving accuracy of rheological measurements of silver paste through the reduction of wall slip behavior.

SKILLS

Language: Cantonese (Conversational)

Characterization: UV-VIS spectroscopy, dynamic light scattering (DLS), thermogravimetric analysis (TGA),

Lab Equipment: viscometer, rheometer, optical profilometer, spin coater, adhesion peel tester, photovoltaic IV tester

Software: Minitab, Microsoft Office, MATLAB® (basic), Python 3 (basic) and AutoCAD

PUBLICATIONS

- Amaral, P. E., Nieman, G. P., Schwenk, G. R., Jing, H., **Zhang, R.**, Cerkez, E. B., ... & Ji, H. F. (2019). High electron mobility of amorphous red phosphorus thin films. *Angewandte Chemie*, 131(20), 6838-6843.

PROFESSIONAL ACTIVITIES

Material Advantage Drexel Chapter

Philadelphia, PA

Vice President

June 2020 – Current

- Coordinated a virtual event with interactive STEM related demonstrations performed by volunteers with minors from grades 5-9.
- Representative of Dean's Student Leadership Council of the College of Engineering responsible for attending advisory meetings to discuss

Society of Asian Scientists and Engineers (SASE)

Philadelphia, PA

External Vice President

September 2017 – June 2020

- Coordinated mentorship between SASE Drexel chapter and high school student of SASE Central Jr. chapter.
- Hosted a large scale Asian Night Market event for over 100 incoming freshman at Drexel and facilitated communication and logistics between 10 participating student organizations.
- Attended 2018 & 2019 SASE National Conference to accept Most Outstanding Chapter Award on behalf of SASE Drexel.

EXTRA CURRICULAR ACTIVITIES

Drexel University Orchestra, Associate Principle Double Bassist

September 2017 – Present

Cheung Sifu Hung Gar Kung Fu Academy, Kung Fu & Lion Dance Performer

June 2013 – Present