

# Vanessa Kwong

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## RESEARCH INTERESTS

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- Optics and transport in two-dimensional van der Waals heterostructure devices

## EDUCATION

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### University of California, Riverside

*Oct 2020 – Present*

B.S. in Physics (Standard)

*Relevant Coursework:* Condensed Matter Physics, Computational Physics, Classical Mechanics, Electromagnetism, Electromagnetic Waves, Thermodynamics / Statistical Mechanics, Introductory Computer Science, Introductory Biochemistry, Organic Chemistry

## EXPERIENCE

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### The Joe Lab at UC Riverside

Riverside, CA

*Undergraduate Researcher*

*Oct 2023 – Present*

- Demonstrated expertise in fabrication of silicon-based TMD heterostructure devices through precise patterning and dry transfer of mechanically exfoliated two-dimensional (2D) materials.
- Conducted optical and electrical measurements and data analyses for novel devices
- Built, used, and set up equipment in new laboratory space, training users on laboratory / clean-room facility for nanoscale engineering.

### UC Riverside Research in Science and Engineering (RISE)

Riverside, CA

*Undergraduate Researcher*

*Jun 2024 – Aug 2024*

- Conducted independent research on fabrication and developing platinum contacts and testing quantum transport for transition metal dichalcogenide (TMD) devices
- Presented topic to over 250 multidisciplinary researchers, faculty, and guests.
- Assisted in fabrication of graphene heterostructures for magnetotransport in search of the quantum anomalous Hall effect.
- Completed final report titled "Developing Low Temperature Contacts for TMD Heterostructure Devices"
- Advisor: Prof. Andrew Joe

## EVENTS

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### UC Riverside RISE Program Symposium

*Aug 2024*

- Oral presentation on low-temperature device measurements and background on platinum contact development for WSe<sub>2</sub> based devices for Hall and transport data

### UC Riverside Undergraduate Research Symposium

*May 2024*

- Presentation: "Optical Characterization of Two-Dimensional Semiconductor Heterostructures"
- Talk on emerging research within TMD heterostructure devices and their optical measurements, analyses, and relevance in materials science and engineering for future optoelectronics

## PROJECTS

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### **Laser Dispersion Calculation Program**

*Apr 2024*

- Developed and implemented program to relate diffraction grating and placement to dispersion of light from supercontinuum laser by selected wavelength

### **PLTW Biomedical Sciences Capstone Research**

*Oct 2019 - Jun 2020*

- Independent research on effectiveness of natural preservatives in limiting bacteria growth

### **Los Angeles County Science and Engineering Fair**

*Oct 2017 - Mar 2018*

- Research and presentation on effectiveness between common materials of laboratory gloves in preventing bacteria penetration

## SKILLS

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**Laboratory:** Mechanical Exfoliation, Dry Transfer, Sputtering, Atomic Force Microscopy (AFM), Soldering, Optical Path Setup, Electron-beam Evaporation (EBE) & Lithography (EBL), Spectroscopy, Spectrophotometry

**Programming:** C++, Python, MATLAB, HTML, CSS, JavaScript

**Other:** LATEX, CAD (KLayout, AutoCAD), Excel

**Languages (Spoken):** English (Native), Cantonese (Native), Mandarin (Fluent)

## AWARDS

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UC Riverside College of Natural & Agricultural Sciences Dean's List

3rd Place Microbiology Senior in LA County Science and Engineering Fair (2018)