Xinan Wu

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EDUCATION

Peking University **Sep 2019 - Jul 2023 (Expected)**
Major in Physics **Grade:** 91.1/100 (Major), 89.7/100 (Overall)

Advanced Courses:

- Introduction to Nanoscience and Technology | 100/100
- Seminar for Equilibrium Statistical Physics | 100/100
- Seminar for Quantum Mechanics | 98/100
- Advanced Technologies and Experiments for Materials Characterizations | 96/100
- Introduction to Nanoelectronic Devices | 95.5/100
- Ultrafast Laser and Spectroscopy | 95/100
- Nanoionics | 95/100
- Nonlinear Optics | 94/100
- Geometrical Optics and Optical Instruments | 93/100
- Materials Physics | 92/100
- Wide Bandgap Semiconductor | 91.5/100

RESEARCH INTEREST

Low-Dimensional Materials and Optoelectronic Devices

RESEARCH EXPERIENCE

Research on Quasi-2D Blue Perovskite LEDs **Jul 2022 - Dec 2022 (Expected)**
Supervisor: Prof. Letian Dou *Purdue University*

- Studied the effect of different ligands on the luminescence properties (such as PLQY and the decay time) of quasi-2D perovskite films.
- Fabricated devices and optimized parameters (such as HTL and ETL) to achieve high device efficiency and stability.
- **Progress:** Strat writing the manuscript, the first paper is in preparation.

Undergrad Research in Peking University **Jan 2021 - Jun 2022**
Supervisor: Prof. Yunan Gao *Peking University*

Improvement on CsPbI3 Perovskite Single Quantum Dots Luminescence **Sep 2021 - Apr 2022**

- Prepared CsPbI3 perovskite nanocrystals of good quality (single exponential decay) by hot injection method, and perovskite films by spin coating.
- Characterized the properties (PLQY, the decay time, and the stability) of perovskite single quantum dots using EMCCD and Spectrometer at low temperature (4.2K).
- Fabricated single perovskite quantum dots sandwiched by 2D hBN sheets and characterized their luminescence condition at low temperature (4.2K).

CsPbBr3 Perovskite Single-Crystal Films Based Micro-Nano Lasers **Apr 2021 - Dec 2021**

- Fabricated perovskite seeds using the inkjet printing method, and prepared single-crystal films with controllable thicknesses.
- Simulated micro-nano laser structures using known property parameters of CsPbBr3 Single-Crystal Films using COMSOL software.
- Performed Focused ion beam (FIB) etching of the synthesized films, structural characterization, and measured their fluorescence properties.

Undergrad Research in Rice University Virtually **May 2022 - Sep 2022**
Supervisor: Prof. Boris I. Yakobson *Rice University*

Research on Potential Offset Calculation **May 2022 - Sep 2022**

- Calculated the potential distribution in 3D space in the situation of inserting a layer of BN in different directions of the diamond analytically, and specifically brought into the numerical calculation and compared with DFT method.
- Used the charge analysis method to give the charges of all atoms in one period and used them to calculate the potential offset after inserting the BN layer.

Research on Colors of Different 2D Materials **Jul 2022 - Aug 2022**

- Calculated the color distribution of different 2D materials under different layers using TM and DFT methods.

Yutchun - Weizmann Winter School **Jan 2022 - Mar 2022**
Weizmann Institute of Science, Israel *Remote*

- Listened to talks given by professors from Weizmann Institute of Science and raised questions, then discussed them with professors.
- Contacted Prof. Yuval Gefen via email and had meetings to discuss some questions about active quantum steering, and then did literature research on measurement-induced quantum steering.
- Gave a presentation about the research and set up a research proposal, and finally got an "Outstanding" evaluation (Top 35% among over 60 students).

SIR Model Based Research on Infectious Disease Transmission **Dec 2020 - Apr 2021**
Supervisor: Prof. Guanxiang Wang *Peking University*

- Established the SIR model and conducted numerical simulation on the data immediately after the outbreak of COVID-19 in China to analyze its parameter sensitivity.
- Introduced SEIR model and Time-Delay model to optimize and analyze the model.
- Conducted mean-field modeling of infectious disease transmission and combined with SIR model to analyze and calculate the optimal vaccination strategy.

WORK EXPERIENCE

SDS "Question Bar" Program in Peking University **Oct 2021 - May 2022**
Teaching Assistant *Peking University*

- Answered questions from students in all basic physics courses such as mechanics, electromagnetism, and advanced mathematics.
- **Impact:** Most students got at least an A- grade (over 85/100).

Peijian Education Limited Company **Jul 2019/2020/2021-Aug 2019/2020/2021**
Teaching Assistant *Hangzhou China*

- Delivered a number of physics lessons at college level to high school students, and gave students some mock exams for the National Physics Olympiad.
- **Impact:** Over 20 students got the first prize in the National Physics Olympiad (top 100 among all Chinese high school students), and 5 of them joined the National training team for IPhO (top 50 among all Chinese high school students).

AWARDS & SCHOLARSHIPS

- Merit student in Peking University (Top 5% among all undergraduate and graduate students in Peking University) 2022
- Qin Wanshun Jin Yunhui Scholarship (Top 2% among all undergraduate and graduate students in Peking University) 2022
- WeiMing Student Scholarship (Top 10% among over 840 undergrad students in School of Physics) 2022
- Grand Prize in "Challenge Cup" National College Student Competition (Top 4% among over 900 competing teams) 2022
- "Outstanding" evaluation in Yutchun-Weizmann Winter School (Top 35% among over 60 students) 2022
- Merit student in Peking University (Top 5% among all undergraduate and graduate students in Peking University) 2021
- Qin Wanshun Jin Yunhui Scholarship (Top 2% among all undergraduate and graduate students in Peking University) 2021
- Second Prize in "Challenge Cup" National College Student Competition (Top 15% among over 600 competing teams) 2021
- The Third Prize of Physics Competition of Chinese College Students 2020
- The First Prize of Mathematics Competition of Chinese College Students 2020
- The First Prize in the 35th National Physics Olympiad 2018

ADDITIONAL INFORMATION

Laboratory: AFM, STM, TEM, Spectrometer, Inkjet Printer, Schlenk Line, Evaporator, etc.
Programming: Python, Mathematica, MATLAB, FDTD, COMSOL, LATEX
English Proficiency: TOEFL: 109 (30/R + 30/L + 22/S + 27/W)