Resume - Yongli He

yonglihe@umich.edu

EDUCATION

University of Michigan   Ann Arbor, MI, USA

PhD student in Applied Physics   Sept. 2022 – Present

Huazhong University of Science & Technology   Wuhan, China

BS in Physics   Sept. 2018 – Jun. 2022

GPA: 3.97/4.00 (rank: 2/167)

PUBLICATIONS

1. He, Y., Song, B. & Tang, J. Optical metalenses: fundamentals, dispersion manipulation, and applications. *Front. Optoelectron.* **15**, 24 (2022). https://doi.org/10.1007/s12200-022-00017-4

CONFERENCE PRESENTATIONS

1. **He, Y.**, Liu, P., Gao, L., Song, B. & Tang, J., "Efficient Colloidal Quantum Dot Short-infrared Photodetectors with Coupled Metasurfaces" (Poster), *International Photonics and OptoElectronics Meetings (POEM2022).*

2. **He, Y.**, Fung, R., & Nielsen, J., "High-Accuracy Ultra-Short Inner-Volume Saturation Pulse For 3D Steady-State Imaging", *International Society of Magnetic Resonance and Medicine (ISMRM) Annual Meeting & Exhibition, Singapore 2024*

RESEARCH EXPERIENCE

Functional MRI Lab, Univ. of Michigan   Ann Arbor, MI

GSRA, Supervisor: Dr. Jon-Fredrik Nielsen.   Dec.2022 - Present

- *MRI RF and Gradient waveforms joint pulse design*
  - Optimized the pulses to achieve spatial-selective excitation
  - Trained data-driven model to design off-line universal pulses for different subjects

Wuhan National Lab for Optoelectronics   Wuhan, China

Research Assistant, Professor Jiang Tang   May 2020 – Mar. 2022

- *Design and Optimization of Quantum Dot Infrared Photodetector Based on FDTD Simulation*

- o Optimized the thickness of functional layers of quantum dot (QD) infrared photodetectors to realize maximal light absorption

  - o Designed and integrated dielectric metasurfaces to enhance external quantum efficiency of the infrared photodetectors
- *Monte Carlo Simulation Based on Geant4*

  - o Modeled on Geant4 (software for particles simulation) and simulated the process of x-ray incidence on MAPbI3 photodetector

  - o Analyzed the energy deposition spectrum of the process and provided guidance to the fabrication of MAPbI3 x-ray photodetector

NCSU GEARS 2021 – Summer Research Program Online

Research Assistant, Professor Kaveh Ahadi. July 2021 – Aug. 2021
- *Simulation Study of Two-Dimensional Charge Carriers at AlN/GaN Heterointerface*

  - o Explored the conditions that give rise to 2D hole gas (which is poorly investigated by previous works) at the heterointerface

  - o Demonstrated that the charge densities at heterointerface can be controlled by varying the quantum well width, i.e., the thickness of AlN layer

Undergraduate Thesis Wuhan, China

Supervisor: Prof. Xuebin Bian Aug. 2021- Present
- *Title: The Applications of Parallel Computing in Ultrafast Optics*

  - o Computed the high-order harmonics generation (HHG) and above-threshold ionization (ATI) spectra of laser-molecular interaction processes in one-dimensional case on Fortran (serial computation)

  - o Computed the HHG and ATI spectra in three-dimensional case using parallel computing (OpenMP and MPI)

SELECTED HONORS & AWARDS

- National Scholarship (0.2% in the nation) 2020
- Outstanding Undergraduate of HUST (1.5% in the university) 2020
- Third Prize of Contemporary Undergraduate Mathematical Contest in Modeling 2020
- First Prize of The Chinese Mathematics Competitions 2019
- Scholarship for Outstanding Freshman in Academia 2018

ADDITIONAL INFORMATION

- Experimental skills, e.g., benchtop optics, characterization (SEM, AFM, etc.), nanofabrication (photolithography, magnetron sputtering, etc.)
- Programming experiences on Matlab, C++, and FORTRAN
- Simulation experiences on FDTD Solutions and Geant4
- Familiar with LaTeX