Shangyi Guo

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Education Background

School of Physics, Shandong University (SDU) *Sept.2020-Jun.2024 (expected)*

Bachelor of Science in Physics, Jingwei Leading Talent Program

- Overall GPA: **90.49**/100 (1st to 3rd semesters)
- Ranking: **3**/80 (1st to 3rd semesters)

Honors & Awards

- Excellent Student Award for Science and Technology Innovation, SDU *Apr.2022*
- DeEdu Scholarship, SDU *Nov.2021*
- Annual Academic Scholarship, SDU *Sept.2021*
- Outstanding Student Cadre Award, SDU *Sept.2021*
- Excellent Student Award of International Plasma Physics Summer School, HIT *Aug.2021*

Academic Interests

Condensed Matter Physics: 2D quantum materials & devices, 1D semiconductors & optoelectronic devices

- Experimental research of electronic and quantum properties of 2D systems by nano-device fabrication and electronic transport measurements
- Experimental research of III-V nanowires semiconductor for optoelectronic device applications by controllable synthesis and photoelectric investigation
- Numerical investigations of novel quantum phenomena in Condensed Matters (*want to carry out)

Academic Experience

Controllable synthesis and photoelectric performance (infrared detection) investigation of Core-Shell III-V nanowires *Sep.2021-Present*

Supervisor: Prof. Zai-xing Yang, Shandong University

- Synthesized Core-Shell III-V nanowires (GaSb@SnS_2, GaAs@GeS_2) with high aspect ratio and uniform shell thickness by controllable vapor-solid-solid growth mode of CVD.
- Discovered novel negative photoresponse which can enhance the photocurrent in near-infrared range (1310nm, 1550nm) of Core-Shell III-V nanowires (GaSb@SnS_2, GaAs@GeS_2) in visible wavelengths (405nm, 520nm) by using Semiconductor Device Analyzer and semiconductor laser.
- Read masses of papers with regard to the III-V nanowires and participated weekly group meetings.
- Working on the project with Postdoc now.

Design & development of a multifunctional passive filter for test circuits of 2D systems *Jul.2021-Aug.2021*

Supervisor: Prof. Zhe Wang, Xi'an Jiaotong University

- Designed a kind of passive filter capable of adjusting cutoff frequency and passband range (1Hz, 100Hz and 1000Hz).
- Used the required components to weld the circuit according to the designed and simulated circuit diagram. (Three same multifunctional passive filters have been successfully fabricated and the performance is good.)
- Presented individual research report entitled "Multifunctional Passive Filter" in group meeting.
- Learned laboratory operations of 2D quantum materials and devices, prepared two-dimensional materials (graphene and hNB) with tapes, combined them into hNB-graphene-hNB structures under high power microscopy, and tested the properties of samples.

Physical mechanism of membrane crossing and anticancer function of Nano-realgar *Mar.2021-May.2021*

Supervisor: Prof. Yang Tan, Shandong University

- Read relevant literature on the bactericidal effect of nanomaterials.
- Wrote a research report entitled "the Physical Mechanism of Membrane Crossing and Anticancer Function of Nano-realgar" by summarizing a number of papers, in which a conjecture on the physical mechanism of membrane crossing of Nano-realgar was put forward.
- Presented individual research report entitled "NANO-REALGAR · ANTI-CANCER · CELL MEMBRANE" in the final seminar.

Academic Visiting

- Winter camp for undergraduates, Shanghai Advanced Research Institute, Chinese Academy of Sciences, China *Jun.2022*
- International Plasma Physics Summer School, Harbin Institute of Technology, China *Aug.2021*
- Summer class "Preparation, Characterization and Application of Nanomaterials", Polytechnic Institute of Porto, Portugal *Jul.2021*

Academic Skills

Laboratory:

- Material preparation skills: CVD growth of thin films and nanowires, Stripping the 2D material with tape, Printing nanometer array structure, etc.
- Micro- and Nano-fabrication skills: Electron Beam Lithography, Ion beam evaporation, etc.
- Characterization skills: STEM, XRD, etc.

Theory:

- Programming skills: C, MATLAB, Python

Additional Information

Language:

- Mandarin (Native)
- English (Professional proficiency)
- Spanish (Hobby)

Position:

- Monitor of Physics class, School of Physics, SDU *Sept.2021-Present*
- Striker of student football team, School of Physics, SDU *Sept.2020-Present*
- Vice-monitor of physics class, School of Physics, SDU *Sept.2020-Sept.2021*
- Cadre of Academic Innovation Department of Student Union, SDU *Sept.2020-Sept.2021*

Interests:

- Football
- Piano
- Rubik's cube
- Guitar