Guan Xin

Graduate Student (PhD), Ohio State University (OSU), majoring in Atmospheric Sciences
Email: guan.481@buckeyemail.osu.edu

Profile

Highly interested in environmental sustainability efforts, as well as nanoscience. Familiar with the use of computational modelling to study complex systems. Currently investigating the statistics of weather variables for better numerical weather prediction.

Research Experience

Comparing intrinsic energy differences in symmetry-adapted crystal field orbitals against vibronic interactions as factors for spontaneous spin-flipping in high symmetry (C_{3v}, C_{5v}, D_{3h}, and D_{5h}) nickel compounds as a case study for molecular magnets (2023-2024)

- Creation of Bash and Python scripts for automating the usage of ORCA (a computational chemistry software)
- Data fitting model crystal field Hamiltonian matrices to derive approximate important parameters in ligand field theory
- Developing a better framework to investigate quantum tunnelling of magnetisation

Screening and optimisation of transition metal catalysis of the electrochemical oxidation of industrial waste agave juice as a replacement for the oxygen evolution reaction in the generation of green hydrogen (2022-2023)

- Self-directed research and experimental design
- Operation of a catalytic flow cell for electrochemical reactions
- ~8 months lab attachment

Extraction and screening of major histocompatibility complex I peptides of Epstein-Barr Virus induced nasopharyngeal carcinoma (2021)

- Application and comparison of peptide extraction methodologies in a research lab
- Computational analysis of peptides via comparison with given database
- ~3+ months lab attachment

Minor experience with

- A wide variety of instrumental analysis techniques (eg. Gas Chromatography, IR spectroscopy)

Education

Bachelor of Sciences (Honors), National University of Singapore (NUS) (2020-2024)

- Major in Chemistry, Minor in Nanoscience
- Miscellaneous programmes: Special Programme in Science (SPS), University Scholar Programme (USP)
- Cumulative Average Points (CAP): 4.48 / 5.0

Miscellaneous Work Experience

Teaching internship with Singapore Ministry of Education (2020 Jan to April)
SPS mentor (teaching assistant) for 4 SPS courses (2022-2024)