

Chaolong Wang

Email me: chaolong.wang@spc.ox.ac.uk, wang-cl21@mails.tsinghua.edu.cn

Call me: +44 7884900983, +86 18722237287

Current Address: OX1 2DL, St. Peter's college, Oxford, UK;

Pron: He/him



EDUCATION

Tsinghua University, Tanwei College

Jun, 2021 - Now

Major: Chemical biology + Chemical engineering and industrial bioengineering|

GPA: 3.92 / 4.0| Ranking: 3/59

University of Oxford, St. Peter's College

Sep, 2023 - Now

Major: Engineering Science| Visiting Student| Yinghua Scholar

Courses: Physical Chemistry, Machine Learning, Deep Learning, Biochemistry, Organic Chemistry, Physics (Mechanics, Quantum, Optics), Fundamentals of Chemical Engineering

ACADEMIC EXPERIENCE

Student Research Training Program: Anionic Chemistry in Sodium Batteries

Oct 2022 - Now

- Conducting a project which probes the solvation effect in sodium batteries by DFT calculation in Gauss16. This research can possibly give useful suggestion on electrolyte design on sodium batteries. Common solvents and salts in sodium batteries was chosen to be computed. To analysis data from Gaussian files code for data extraction and analysis was developed by python. The anionic chemistry of Sodium batteries was revealed by energy and orbital analysis. Data was presented with Origin. I grasped the basic research workflow, ability to use commercial software to conduct computation and present results. I enhanced python skill on data processing. This project is still ongoing.

Small Language Model:

Jul 2023 - Aug 2023

- Developed a small language model with limited computational resources with GPT architecture. The model was developed by Hugging Face API. It achieves a 3-year-old-child level of speaking with only around 1M parameters. The model and final report are available.¹ I understood basic Transfer structure such as attention mechanism, encoder and decoder. Previously, I also learned some classic Machine Learning algorithms.

Free Energy Cup Competition:

Apr 2023 - May 2023

- Teammates and I used iodine clock reaction to control a battery powered car to drive a certain distance. The competition involved car design, experiments. I was in charge of iodine reaction and partly of design of the car. An inversion proportionality of the time when color changes and concentration of $(\text{NH}_4)_2\text{S}_2\text{O}_8$ was identified. We achieved the 3rd place in the final match.

Tanwei - Oxford Program in Chemical Biology and Related Fields:

Jul 2022

- We listened lectures by professors from both Tsinghua and Oxford, covering a wide range of subjects including chemical, biomedical, environmental and pharmaceutical engineering. We wrote summaries and gave a presentation on an interested topic. My topic was Artificial Leaf mainly introducing the work of DANIEL G. NOCERA from MIT.

Research on Cold Spray:

Feb 2023

- Conducting an investigation on typical pressurized cold sprays on the market with prospective of physical chemistry. A cooling model was built and the model was applied on some situations to validate some suggestions on using cold spray and identify some hazards. Report is available.²

EXTRACURRICULAR ACTIVITIES

Main voluntary works: (99h)

- Student ambassador| *Jul 2022*| Going back to hometown with other ambassadors for outreach events such as recruitment. Awarded bronze prize by Tsinghua University.
- Voluntary teaching in Tibet| *Jul-Aug 2023*| Going to Tibet with teammates, for voluntary teaching in local orphanage and a remote area village. Awarded silver prize by Tsinghua University.

Main social practice:

- Team leader of 'CFJY Group'| *Aug 2022*| We went to Fuzhou to conduct a real place research on the development of Fuzhou high-tech zone and investigate several companies. The report was awarded bronze

¹ The model and other information are available at https://github.com/Toflamus/Small_language_model_project.

² Report available at https://github.com/Toflamus/Cold_Spray/tree/main.

by local government. We were awarded bronze by Tsinghua University.

- Chief of comprehensive department, Tanwei College science association| Oct.2022-Apr.2023| Responsible for holding events, promotional activities, financial reimbursement. Held 'Free Energy Cup' (Domestic version of Chem-E-car) with teammates and a series of small activities.

Main sports activity:

- College football team left back| *Sep 2021 - Sep 2022*| We achieved 4th in group competition in 2021 and 3rd in 2022.

SKILLS & INTERESTS

Languages: Native Mandarin speaker; Fluent English speaker (IELTS 8); Japanese speaker.

Skills: Python, C/C++, Origin, Gauss, MATLAB, LaTeX.

Interests: Quantum& Statistical Mechanics, AI/ML/DL, Swimming, Football.