DU Linhan 杜林翰

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EDUCATION

Tsinghua University **Beijing, China**
Doctor of Philosophy in Chemical Engineering and Technology 2020 – 2025 (Expected)
- **GPA:** 3.6 / 4.0
- **Honors:** 2022-2023 Wang Jiading Scholarship (汪家鼎奖学金)
  2022-2023 Teng Teng Scholarship (for Social Work) (滕藤奖学金)
  2023-2024 Gao Yingshi Scholarship (高英士奖学金)

Tsinghua University **Beijing, China**
Bachelor of Science in Chemical Engineering and Industrial Biological Engineering 2016 – 2020
- **GPA:** 3.6 / 4.0
- **Honors:** 2020 Outstanding Graduate of Tsinghua University
  2020 Excellent Graduation Thesis of Tsinghua University
  2017, 2018, 2019 Tsinghua University Scholarship

RESEARCH EXPERIENCE

Study on Ion Behavior in Nano Confined Space (Simulation) **Tsinghua University, China**
Supervisor: Prof. Liu Zheng, Prof. Lu Diannan Sept. 2021 – Present
- Structural design and theoretical study of bio-inspired K^+/Na^+ selective channel
  - K^+ selective structure design inspired by KcsA protein (ready for submission)
  - Na+ selective structure design inspired by NavAb protein (in progress)
  - Ion-water ultrafast transport in confined CNT (in progress)
- Thermodynamic calculation of potassium-permselectivity enabled osmotic power generation
  - Model the solution with a primitive model, implicitly solvent and charged hard spheres for ions
  - Calculate the free energy change during selective ion diffusion process

Study on Ion Transport Triggered by Illumination on 2D Membrane **Tsinghua University, China**
Supervisor: Prof. Liu Zheng, Prof. Lu Diannan Sept. 2019 – Aug. 2021
- Build a light-induced carriers' diffusion model to reveal voltage difference along the membrane
- Based on voltage difference, study the ion transport behavior with MD simulation

Exfoliation and Mechanical Transfer of Monolayer 2D Material **Columbia University, USA**
Summer Research Supervisor: Assistant Professor Annie Xian Zhang Jul. 2019 – Aug. 2019
- Learn experimental skills and Raman spectroscopy techniques

PUBLICATIONS

[1] Quan, D.†, Ji, D. †, Wen, Q. †, **Du, L. †**, Wang, L., Jia, P., ... & Guo, W. (2020). Laterally Heterogeneous 2D Layered Materials as an Artificial Light-Harvesting Proton Pump. *Advanced Functional Materials*, *30*(34), 2001549.
[2] **Du, L.**, Hu, X., Lu, D., & Liu, Z. (2021). Ionic Transport Triggered by Asymmetric Illumination on 2D Nano-Membrane. *Molecules*, *26*(23), 7078.

[3] Xia, M., Wang, Z., **Du, L.**, Fu, Z., Jiang, G., Lu, D., ... & Liu, Z. (2022). A Core-Shell Cascade of Chloroperoxidase and Gold Nanoclusters for Asymmetric Hydroxylation of Ethylbenzene. *ChemCatChem*, *14*(4), e202101732.
[4] Li J†, **Du L**†, Kong X, et al. Designing artificial ion channels with strict K+/Na+ selectivity toward the-next-generation electric-eel-mimetic ionic power generation[J]. National Science Review, 2023: nwad260.

CONFERENCES

The 15th Global Chinese Chemical Engineers Symposium **Hong Kong, China**
Poster (in English) Aug. 2023
- A nature-inspired design of a double-layer graphene membrane module for potassium ion transport

The 3rd National Process Modeling and Simulation Academic Conference **Hainan, China**
Oral (in Chinese) Apr. 2023
- Study on Ion Transport Behavior in Nano Confinement Space

The 636th Ph.D. Academic Forum of Tsinghua University **Beijing, China**
Poster (in Chinese) May 2021
- Ionic transport triggered by asymmetric illumination on 2D nano-membrane
  - Excellent poster

TEACHING ASSISTANT WORKS

Physical Chemistry (1) **Undergraduate course**
Leading Instructor: Prof. Lu Diannan Autumn in 2020, 2021, 2022
- Edit and mark the homework, exams, projects
- Give exercise lessons per two weeks

Physical Chemistry (2) **Undergraduate course**
Leading Instructor: Dr. Deng Geng and Prof. Lu Diannan Spring in 2021, 2022, 2023
- Edit and mark the homework, exams, projects
- Give exercise lessons per month

Advanced Chemical Engineering Thermodynamics **Graduate course**
Leading Instructor: Prof. Lu Diannan Spring in 2022
- Provide computer simulation service on the server

SKILLS

Languages: Native in Chinese; Fluent in English; Conversational Proficiency in Japanese
Programming Languages: Proficient in Python, Bash and Matlab; Intermediate in C++ and Fortran
Molecular Dynamics: Proficient in NAMD; Intermediate in Gromacs
Quantum Chemistry: Proficient in Gaussian and CP2K; Intermediate in VASP
Certifications & Training: Certified User in Aspen Plus; Procifient in VMD

HOBBIES

Ski, Bridge, Animate