Jiaqi Lan

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Educational Background

Karlsruhe Institute of Technology Karlsruhe, Germany
Master of Science in Chemical and Process Engineering *Apr 2025 - Present*

Tianjin University Tianjin, China
Bachelor of Engineering in Chemical Engineering *Sep 2020 - Jun 2024*

Research Experience

Topology Optimization of Bend for Different Flow Configurations Karlsruhe, Germany
Course Project in LBRG at Karlsruhe Institute of Technology *Apr 2025 - Aug 2025*

- Explored the lattice Boltzmann method and topology optimization.
- Adjust parameters and modify the model to study the effects of Reynolds number and other variables on simulation results.
- Used C++ in OpenLB to modify parameters and models, employing ParaView to visualize simulation results, and finally utilizing Shotcut to create a video summarizing the findings.
- Obtained data such as model stability boundaries, and the influence of factors like Reynolds number on the final pipe shape was investigated.

Performance of Fixed-Bed Reactor with Different Packing Geometries Karlsruhe, Germany
Course Project in CVT at Karlsruhe Institute of Technology *Apr 2025 - Aug 2025*

- Acquired the fundamentals of STAR-CCM+ for modeling as well as the Navier-Stokes equations and the $k-\varepsilon$ turbulence model.
- Construct a fixed bed model and investigate its pressure drop and heat transfer efficiency. Investigated the performence of different packing shapes.
- Used Blender to create the surface mesh of the fixed bed, then adding physical boundaries and material properties in STAR-CCM+, followed by meshing the model.
- Completed a comparison of the performance of different packings, and analyzed the reasons for the discrepancies between simulated and experimental values.

Numerical Simulation of Glyoxylic Acid Extraction in Microchannels Tianjin, China
Undergraduate Researcher Taotao Fu Group at Tianjin University *Mar 2024 - Jun 2024*

- Discovered numerical simulation methods, which have a lot of promise for advancement in the field of microfluidics.
- Developed a model using computational fluid dynamics method and simulate the two-phase flow extraction procedure in microchannels.
- Used COMSOL to model various microchannels and models and finded out the most suitable circumstances for glyoxylic acid extraction by altering the initial conditions.
- Concluded that the efficiency of glyoxylic acid extraction, which can be greatly increased by parallel streams that emerge under specific conditions.

Work Experience

Graphic Designer, Visual Identity of Enterprise Beijing, China
You Gu Intellectual Property Law Firm *Jun 2024 - Sep 2024*

- Provided startups with a comprehensive range of visual design services, including web pages, business cards, brochures, and logos.
- Created a workable plan and promptly got in touch with Party A.
- Finished the graphic design and promptly addressed the client's suggested adjustments using Adobe Illustrator and Sketchbook.
- Accomplished the project handover by the deadline and followed up on the subsequent printing.

Technical Skill

Simulation: STAR-CCM+, COMSOL, Aspen Plus

Programming: MATLAB, C++, Python, LaTeX

Language: Chinese (Native), German (Fluent in professional), English (Fluent in professional)

Academic Activity

Nanotechnology and Electric Vehicle Technology Tianjin, China

International Seminar at Tianjin University *May 2022 - Jan 2023*

- Learned about the great development prospects of silicon-based anode lithium-ion batteries and the possibilities of application in electric vehicles.
- Investigated which silicon-based anode lithium-ion batteries have the best range and higher energy density.
- Compared the anode's performance through extensive research, debate, and principle analysis.
- Produced an conference paper in the proceedings of MSMEE 2023 and delivered a fantastic presentation at the conclusion of the symposium.