Yixuan **Liang**

MULTIPHASE FLOW · NON-NEWTONIAN FLUID · RHEOLOGY

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Education

Zhejiang University — *Hangzhou, Zhejiang, China*

M.E. IN ENGINEERING MECHANICS — *Sep. 2022 - Jun. 2025*

- GPA: 3.94/4.3
- Main courses: Multiphase Flow Dynamics, Computational Mechanics, Non-Newtonian Fluid Mechanics
- Got the **"Award of Honor for Graduate" (top 10%)**

Xi'an Jiaotong University — *Xi'an, Shaanxi, China*

B.E. IN ENGINEERING MECHANICS — *Sep. 2018 - Jun. 2022*

- GPA: 3.86/4.3
- Main courses: Fluid Mechanics, Theory of Elasticity, Mathematical and Physical Equation, Numerical Computational Method
- Got the **Award of "Outstanding Graduation Thesis" (top 1%)**
- Got the **National Scholarship**, which is the highest level scholarship and is awarded to student of exceptional merit

Experience

Rheology of Particle Suspensions — *Hangzhou, Zhejiang*

SIMULATION — *Sep. 2022 - Now*

- Modified a function in LAMMPS for attractive particle suspensions.
- Explained shearing-thinning behavior through multiple microstructure analysis.
- Established a viscosity constitutive model by decomposing hydrodynamic stress and contact stress, bridging the gap between steady shear and oscillatory shear.

Rheology Model of Dilute GO Suspensions — *Hangzhou, Zhejiang*

THEORETICAL MODELING — *May. 2024 - Now*

- Explained the dramatic deviation between experimental observations and existing models for disk-like particle suspensions by configuration transformation of Go sheets.
- Established a theoretical model based on the configuration transformation of GO sheets, which is in good agreement with experimental data for GO sheets of different sizes.

Particles Sedimentation and D-K-T Phenomenon — *Hangzhou, Zhejiang*

SIMULATION — *Mar. 2023 - Mar. 2024*

- Modified the lubrication module in a program based on the Fictitious Domain method, improving the accuracy of the simulation of the interaction between particles.
- Applied the finite-time Lyapunov exponent to measure the fluid deformation.

Rheology Measurements of Heavy Oil Emulsion — *Hangzhou, Zhejiang*

EXPERIMENT — *Aug. 2023 - Nov. 2023*

- Tested The relationship between viscosity and yield stress as a function of water content and temperature.

Air Entrapment When Droplets Impact on a Liquid Pool — *Xi'an, Shannxi*

EXPERIMENT — *Jun. 2021 - Jun. 2022*

- Plotted a regime diagram for air disk evolution and explained the mechanism of different morphology
- Established a dimensionless model for air disk contraction

Publication

- **Liang Y X**, Wang J H, Pan D Y*. Rheological properties and micro-mesoscopic mechanisms of complex particle suspensions: A review. ***Chin Sci Bull***, 2024, 69: 1192–1210

Skills

Programming	Lammps, Fluent, open source codes(C++, Fortran)
Data process	Python, Paraview, Matlab, Origin, Tecplot..
Languages	Chinese, English (IELTS-6.5)
Experiment	High-speed camera, Rheometer

Summary

My research experience has provided me with an in-depth understanding of rheology constitutive models. I am eager to explore the rheological theory and flow behavior of a wide range of new materials using the latest simulation techniques.