JAEKWANG KIM

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EDUCATION

University of Illinois at Urbana-Champaign, IL *2018 - Present*
Ph.D. in Theoretical and Applied Mechanics
Department of Mechanical Engineering

University of Illinois at Urbana-Champaign, IL *2016 - 2018*
M.S. in Theoretical and Applied Mechanics
Department of Mechanical Engineering

Seoul National University, South Korea *2009 - 2015**
B.S. in Naval Architecture & Ocean Engineering
Graduation with the highest honors

RESEARCH INTEREST KEYWORD

Polycrystalline material, multi-scale modeling, data driven reduced-order modeling, Non-Newtonian fluids, complex fluids, numerical analysis, uncertainty quantification

PUBLICATION

J.B. Freund J. Kim, R. H. Ewoldt
Field sensitivity of flow predictions to rheological parameters
Journal of Non-Newtonian Fluid Mechanics, Vol 256, 71–82, 2018.

J. Kim, P. K. Singh, J.B. Freund, R. H. Ewoldt
Uncertainty Propagation in Simulation Predictions of Generalized Newtonian Fluid Flows
Journal of Non-Newtonian Fluid Mechanics, Vol 271, 104138, 2019.

J. Kim, J. D. Park
The non-homogenous flow of a thixotropic fluid around a sphere
Applied Mathematical Modeling, Vol 82, 848–866, 2020.

J. Kim, J. D. Park
A thixotropic fluid flow around two sequentially aligned spheres
Korean Journal of Chemical Engineering, Vol 38, 1460-1468, 2021

J. Kim, M. Jacobs, S. Osher, N. C. Admal
A crystal symmetry-invariant Kobayash-Warren-Cater grain boundary model and its implementation using a thresholding algorithm
Computational Materials Science, Vol 199, 110575, 2021.

CONFERENCE

J. Kim, P. K. Singh, J.B. Freund R. H. Ewoldt
Poster, Uncertainty Propagation in Simulation Predictions of Generalized Newtonian Fluid Flows, *Society of Rheology 89th Annual Meeting*, 11 October 2017, Denver, USA.

*Including 2 years of military service during the program

J.B. Freund, J. Kim, R. H. Ewoldt
Field sensitivity of flow predictions to rheological parameters, *Society of Rheology 90th Annual Meeting*, 16 October 2018, Houston, USA.

J. Kim, M. Jacobs, N. C. Admal
A fast thresholding algorithm for the Kobayashi-Warren-Carter grain boundary model, *2020 Society of Engineering Science*, 29 September - 1 October 2020, Virtual Conference (COVID-19)

J. Kim, M. Jacobs, N. C. Admal
A Thresholding Method for the Kobayashi-Warren-Carter Grain Boundary Model with General Mobilities, *16th U.S. National Congress on Computational Mechanics*, 26th July,Virtual Conference (COVID-19)

RESEARCH EXPERIENCE

Research Assistant at Admal Research Group *2019 - Present*
Mathematical modeling and simulations of grain growth

Research Assistant at Freund & Ewoldt Research Group *2016 - 2018*
Uncertainty quantification in simulation predictions of complex fluids

Undergrad Research Intern at Marine Propeller laboratory *2015 - 2016*
Shadow-graphic image analysis to ventilated super-cavities phenomena

TEACHING

Teaching Assistantship
Introduction to Statics *Fall 2020, Spring/Fall 2021*

- Lead discussion sessions (1 time/wk) for 30 students.
- Exam problem develop in *PrairieLearn* online testing/homework platform.
- Prepared in-depth solution procedures to statics problems.

Teaching Assistantship
Introductory Solid Mechanics *Summer/Fall 2019, Spring 2020, Summer 2021*

- Lead discussion sessions (1 time/wk) for 30 students.
- Maintain and add features to online class platform *PrairieLearn* using Python, html, git, and `docker`.
- Hold office hours.

Teaching Assistantship
Fundamentals of Fluid Dynamics *Spring 2019*

- Lead fluid mechanics laboratory sessions (1 time/wk) for 10 students.
- Grading laboratory reports

GRADUATE COURSES

Solid Mechanics: Solid Mechanics 1 (Fundamentals of continuum mechanics), Micro Mechanics of Material, Atomistic Solid Mechanics

Fluid Mechanics: Invicid Flow, Viscous Flow, Instability and Transition, Non-Newtonian Fluid Mechanics & Rheology, Dynamics of complex fluids

Numerical Method: Computational Mechanics, Uncertainty quantification, Advanced Finite Element Method

TECHNICAL SKILLS

Programming	C++, Python, MATLAB, Git, Unix/Linux
Software	`deal.II`, TensorFlow, Pytorch, Gmsh, LAMMPS, Mathematica
Documentation & Tools	Latex, Pgfplot, Tikzfigure, Bibtex
Experimental Tools	Rheometer (DHR-3), Electron Microscope (JEOL 7000F)

AWARD

The Schaller Travel Award A graduate student funding for participating in a technical meeting/symposium, University of Illinois Graduate College, 2021

Graduation with Honors, Summa Cum Laude., *Ranked No.1 in the department*, President of Seoul National University, South Korea, 2015

National Science & Technology Scholarship, Ministry of Science and Technology, South Korea, 2012–2015.

Member of Seoul National University student honor society, STEM, 2013 - *present*

Excellence Award in Writing in Science&Technology, Dean of College of Engineering, Seoul National University, South Korea, 2013.

Excellence Award in Student Ship Design Competition, Society of Naval Architects, South Korea, 2013.

INTERNSHIP AND EXTRA-CIRRUCULAR

Lab Assistant, Worldwide Youth in Science and Engineering Program, 2020 Summer, 2021 Summer

Industry internship, Samsung Electronics Mechatronics Research Center, *Advanced Technology Research Group*, 2020 Summer

Exhibitor, Engineering Open House, *Rheology Zoo*, 2017, 2018

Undergrad Exchange Student, Chemical Engineering Department, Monash University, Australia, 2014

Industry internship, Korea Register of Shipping, 2013 Winter

Military Service, Korea Army Training Center, South Korea, 2010–2012