Ranpeng Li

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EDUCATION

Ph.D., Geodynamics, GEOMAR, Kiel, Germany   May 2024 - present
Advisor: Dr. Juliane Dannberg
Dissertation: Modeling the Effects of Phase Transition on Mantle Convection and Their Role in Planetary Evolution
Project description: Computational geodynamics modeling with community software ASPECT to investigate the influence of mineral phase transitions on mantle convection. Model visualization and interpretation, code testing and implementation, method development.

M.Sc., Geology, University of Florida   Aug 2021 - May 2024
Advisor: Dr. Juliane Dannberg   GPA: 4.0/4.0
Thesis: Exploring Mantle Convection Styles through Earth's History: The Role of Phase Transitions

B.Sc., *with honor*, Earth Science, University of California, Santa Barbara   Dec 2020
Advisor: Dr. Zach Eilon   GPA: 3.7/4.0
Honors thesis: Regularization for body wave tomography of Alaska

PUBLICATIONS

Li, R., Dannberg, J., Gassmöller, R., Lithgow-Bertelloni., & Stixrude, L. (2025). *How Phase Transitions Impact Changes in Mantle Convection Style Throughout Earth's History: From Stalled Plumes to Surface Dynamics.* Geochemistry, Geophysics, Geosystems, 26(2), e2024GC011600. https://doi.org/10.1029/2024GC011600

Dannberg, J., Gassmöller, R., **Li, R.**, Lithgow-Bertelloni., & Stixrude, L. (2022). *An entropy method for geodynamic modeling of phase transitions: Capturing sharp and broad transitions in a multi-phase assemblage.* Geophysical Journal International, 231(3), 1833-1849. https://doi.org/10.1093/gji/ggac293

Sun, J., Rudnick, R. L., Kostrovitsky, S., Kalashnikova, T., Kitajima, K., **Li, R.**, & Shu, Q. (2020). *The origin of low-MgO eclogite xenoliths from Obnazhennaya kimberlite, Siberian craton.* Contributions to Mineralogy and Petrology, 175(3), 1-22. https://doi.org/10.1007/s00410-020-1655-6

TALKS & PRESENTATIONS

Invited talk at <u>ASPECT Annual User Meeting 2025</u>. "*How Phase Transitions Impact Changes in Mantle Convection Style Throughout Earth's History: From Stalled Plumes to Surface Dynamics.*"

Selected talk at <u>Gordon Research Seminar & Gordon Research Conference</u>. "*Phase transitions impact variations in layering of convection throughout Earth's history: Modeling with a new entropy method and visco-plastic rheology.*"

CONFERENCE ABSTRACTS

Li, R., Dannberg, J., Gassmöller, R., Lithgow-Bertelloni., & Stixrude, L. (2023) *Exploring Mantle Convection Styles through Earth's History: The Role of Phase Transitions.* AGU 2023

Van Avendonk, H.J., Bangs, N.L., Becel, A., Adams, S., Amadori, C., Chen, J.Y., Evans, S., Gurcay, S., **Li, R.**, Krysova, A. and Obi, V. (2023) *Marine seismic study to investigate the formation of the rifted margins of the Carolina Trough and Blake Plateau.* AGU 2023

Li, R., Dannberg, J., Gassmöller, R., Lithgow-Bertelloni., & Stixrude, L. (2022) *Phase transitions impact variations in layering of convection throughout Earth's history: Insights from a new entropy method.* AGU 2022

Li, R., Dannberg, J., Gassmöller, R., Lithgow-Bertelloni., & Stixrude, L. (2022) *Phase transitions may have induced plume and slab stagnation in Earth's past: modeling with a new entropy method and visco-plastic rheology.* Ada Lovelace Workshop on Numerical Modeling of Mantle and Lithosphere Dynamics 2022

Li, R., Dannberg, J., Gassmöller, R., Lithgow-Bertelloni., & Stixrude, L. (2021) *How phase transitions change convection patterns through the Earth's history: A modeling study.* AGU 2021

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PROFESSIONAL AND TEACHING EXPERIENCE

Teaching Assistant - Earth Materials   Fall 2022
Instructor: Dr. Matt Smith
Duties: lead mineralogy lab sections, maintain microscopes, hold office hours, grade lab assignments

Teaching Assistant - Age of Dinosaurs   Summer 2022
Instructor: Dr. Ryan Wilhelmi
Duties: maintain office hours, grade assignments

Teaching Assistant - Environmental & Engineering Geology   Fall 2021
Instructor: Dr. Courtney Sprain
Duties: maintain office hours, grade assignments

Research Assistant – Mineralogy sample preparation   Oct 2019 – Mar 2020
Supervisor: Dr. Roberta Rudnick (UCSB)
Mineral separation methodology for steel mortar and pestle rock crushing, Frantz magnetic separation, and heavy liquids density separation.

FIELD EXPERIENCE

Blake Plateau, Offshore Southeast US   Aug 2023
PI: Dr. Harm Van Avendonk (UT Austin)
Four-week high energy marine seismic investigation on the Atlantic passive margin with R/V Marcus Langseth. OBS deployment and retrieval.

Death Valley, CA   Mar 2022
Instructor: Dr. Jim Vogl (UF)
One-week field trip to study the tectonics and the metamorphic core complex in Death Valley.

Mojave Desert, CA   May 2018 & Mar 2020
Instructor: Dr. Alex Wrobel (UCSB)
A four-day field trip to practice the field methodology and a five-day trip to study the structural geology of Mojave Desert. Mapping and field methods.

Semail Ophiolite, Oman   Dec 2019
Instructor: Drs. Matt Rioux and Susannah Porter (UCSB)
Two-week field trip to study the Semail Ophiolite and related UHP rocks, snowball earth related deposits, and Neoproterozoic sedimentary formations in Oman.

HONORS/AWARDS/SCHOLARSHIP

Horn Award, UF Geological Sciences Department   2024
  Recognized for exceptional eagerness, inspiration, contributions to the department, academic excellence, and research activity
UF Grinter Fellowship Award   2021, 2022 & 2023
UF Graduate Student Council Travel Grant   2021, 2022 & 2023
UF Geological Sciences Department Travel Support   2021, 2022 & 2023
UF LUCEI Travel Grant   2021, 2022 & 2023
German Academic Exchange Research Internship in Science & Engineering   2020
Mineralogical Society of America's Undergraduate Prize   2019

OUTREACH AND VOLUNTEER

Treasurer, GeoGrads Student Organization   2022 & 2023 & 2024

Lecturer, Scientist in Every Florida School   2022 & 2023 & 2024

Organizer, Department Brown Bag Seminars	2022 & 2023
Volunteer, Can You Dig It at Florida Museum of Natural History	2022 & 2023

<u>SKILLS</u>

<u>Programming & Softwares:</u>
- Active contributor for ASPECT, a community geodynamics software
- Python, C++, MatLab, GMT, Paraview, ImageJ, Inkscape, Linux, LaTeX, Microsoft Office/Word, Excel, and PowerPoint, Photoshop

<u>Laboratory Methods & Procedures:</u>
- Optical Petrography Analysis, Microscope Photography, Heavy Liquids Separation, Frantz Magnetic Separation, EMPA Sample Preparation