

## Curriculum Vitae of Boda Liu

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**Boda Liu**

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Department of Earth, Environmental and  
Planetary Sciences  
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### EDUCATION

**Ph.D. candidate**, Brown university, expected 2018

Advisor: Yan Liang

**B.Sc.**, Peking University, 2013, Geology

Major: Geology

Advisor: Lifei Zhang

Senior thesis: Geochemistry and metamorphic P-T path of eclogites from Tibetan Sumdo, China

### Additional Training:

Completion of “Introduction to OpenACC Course”, certificated by NVIDIA®, 2016

### RESEARCH INTERESTS

- Melting of heterogeneous mantle
- Trace elements and isotopes fractionation
- Geodynamics of partially molten mantle
- Geochemical inverse problems
- High-order numerical method

### PUBLICATIONS

**Liu B**, Liang Y. (2017) The prevalence of kilometer-scale heterogeneity in the source region of MORB upper mantle, *Science Advances*, 3(11). doi: <http://dx.doi.org/10.1126/sciadv.1701872>

**Liu B**, Liang Y. (2017) An introduction of Markov chain Monte Carlo method to geochemical inverse problems: Reading melting parameters from REE abundances in abyssal peridotites. *Geochimica et Cosmochimica Acta*, **203**: 216-234. doi: <http://dx.doi.org/10.1016/j.gca.2016.12.040>

Liang Y, **Liu B.** (2016) Simple models for disequilibrium fractional melting and batch melting with application to REE fractionation in abyssal peridotites. *Geochimica et Cosmochimica Acta*, **173**: 181-197. doi: <http://dx.doi.org/10.1016/j.gca.2015.10.020>

Liang Y, **Liu B.** Stretching chemical heterogeneity by melt migration in an upwelling mantle: an analysis based on time-dependent batch and fractional melting models (submitted to EPSL)

**Liu B,** Liang Y. Smearing and mixing of chemical heterogeneities by melt migration in an upwelling mantle: application to Pb, Hf, Nd, Sr isotope systems (in preparation)

**Liu B,** Liang Y, Parmentier E. M. A 2D double-porosity model for melting and melt migration beneath mid-ocean ridges (in preparation)

## **ABSTRACTS**

**Liu B,** Liang Y. (2017) A 2D double-porosity model for melting and melt migration beneath mid-ocean ridges. AGU Fall Meeting, poster presentation: DI51B-0313

Liang Y, **Liu B.** (2017) Size-sensitive mixing of chemical heterogeneities by melting and melt migration beneath mid-ocean ridges. AGU Fall Meeting, poster presentation: V51D-0402

**Liu B,** Liang Y. (2016) Effects of Size and Shape of Mantle Source on the Fractionation of Isotopes during Melting of a Heterogeneous Mantle: A Time-Dependent Study. AGU Fall Meeting, oral presentation: DI14A-06

**Liu B,** Liang Y. (2015) Application of Markov Chain Monte Carlo Method to Mantle Melting: An Example from REE Abundances in Abyssal Peridotites. AGU Fall Meeting, poster presentation: V11B-3065

Liang Y, **Liu B.** (2015) Can LREE Enriched Patterns in Clinopyroxenes in Abyssal Peridotites be Produced by Melting of a Depleted Mantle Source? AGU Fall Meeting, poster presentation: V11B-3059

## **RESEARCH & INSTRUMENTAL EXPERIENCE**

Numerical and Statistical modeling:

- Implementation of the Discontinuous Galerkin method using deal.II library
- Parallel computation on multi-core CPU (C++)
- alphaMELTS thermodynamic model for mantle melting
- Markov Chain Monte Carlo Method (C++)
- Geodynamics modeling using ASPECT

Instrumental experience:

- Magnetic mineral separation
- Electron microprobe
- LA-ICP-MS

## **PROFESSIONAL EXPERIENCE**

Research Assistant, Brown University, September 2013 - present

Member of American Geophysical Union, September 2015 – present

## **TEACHING EXPERIENCE**

- Teaching assistant, Brown University, Fall 2016, GEOL0250, Computational Approaches to Modelling and Quantitative Analysis in Natural Sciences: An Introduction
- Teaching assistant, Brown University, Spring 2016, GEOL1620, Continuum Physics of the Solid Earth
- Teaching assistant, Brown University, Fall 2015, GEOL0350, Mathematical Methods of Fluid and Solid Geophysics and Geology

## **HONORS & AWARDS**

- Spring 2018, Brown University Dissertation Fellowship
- 2010-2012 Zengxianzi Fellowship, Peking University
- 2012 “Honorable Mention” in “Interdisciplinary Contest in Modeling”, The Consortium for Mathematics and Its Applications (U.S.)

## **INVITED TALKS**

- 2018/01/09, Peking University
- 2018/01/23, Woods Hole Oceanographic Institution