

Curriculum Vitae

Personal Information

Name:	Longjian Xie	Gender:	Male
Birthday:	Dec. 7, 1988	Nationality:	China

Contact

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Employment

- **Nov. 2020** – : Carnegie Postdoctoral Fellow, Earth & Planetary Laboratory, Carnegie Institution for Science
- **Oct. 2018** – **Oct. 2020**: Postdoctoral Fellow (Researcher), Bayerisches Geoinstitut, University of Bayreuth, Germany
- **Apr. 2017** – **Sep. 2018**: Pre-doctoral researcher in Geophysics provided by Japan Society of Promotion of Science (JSPS), Institute for Planetary Materials, Okayama University, Japan

Education

- **Oct. 2013** – **Sep. 2018**: Ph.D., Geophysics, Institute for Planetary Materials, Okayama University, Japan. Thesis title: “*Viscosity measurement of silicate melt at lower mantle conditions based on developments of boron-doped diamond heater in the multi-anvil apparatus*”. Supervisor: Prof. Dr. Akira Yoneda
- **Sep. 2011** – **Sep. 2013**: Master of Science, School of Earth sciences, China University of Geosciences at Wuhan, China. (leaving during the term)
- **Sep. 2007** – **Jul. 2011**: Bachelor of Science, School of Earth sciences, China University of Geosciences at Wuhan, China. GPA is 3.79, the first rank in Department of Geochemistry.
Major: Geochemistry.

Societies

- Japan Geoscience Union
- American Geoscience Union

Research grant and awards

- SPRUC2020 Young Scientist Award, SPRUC Users Community, September 2020.
- 2018 Dean’s Scientific Award, Okayama University, September 2018.
- Student Outstanding Presentation Award, Japan Geoscience Union Meeting, May

2018.

- Grant for Research Fellow (DC2) from Japan Society for the Promotion of Science (JSPS).

Research Interest

- Viscosity and density of silicate melts at high pressures
- Ultra-high temperature (>3000 °C) and high pressure (>40 GPa) generation and measurement in the multi-anvil press
- Chemical and energy evolution of magma ocean
- Mantle dynamics

Proposals

- SPring-8 beam time (7 times): 2020A1201, 2019A1315, 2018A1637, 2017B1686, 2016B1686, 2016A1651 and 2015A1771.
- PRIUS in Geodynamics Research Center (4 times): 2018-B30, 2017-A01, 2016A02, 2015-A48

Research skills and experiences

- High pressure experiments with multi-anvil press (both quench and *in-situ* method)
- Synchrotron powder X-ray diffraction and radiography
- SEM, EPMA, powder and micro-focus X-ray diffraction
- Spark erosion wire cutting, laser cutting, numerical-controlled milling and grinding machine, lathe
- Gold/carbon coating, vacuum sintering furnace
- Programming using Python, MATLAB, Labview and 'COMSOL Multiphysics'

Invited talks

- 1) **Xie L.**, Yoneda A., Yamazaki D., Manthilake G., Higo Y., Tange Y., Nicolas G., Andrew King, Andrault D. Viscosity of magma ocean and the primordial structure of Earth's silicate mantle. Geophysical lab, Carnegie Institution of Washington, May, 2019.
- 2) **Xie L.**, Boron-doped diamond in multi-anvil apparatus and its implication for in-situ falling sphere viscometry. Science and Technology of Nano-Polycrystalline Diamond 2019, Geodynamics Research Center, Ehime University, Mar., 2019.
- 3) **Xie L.**, Yoneda A., Yamazaki D., Manthilake G., Higo Y., Tange Y., Nicolas G., Andrew King, Andrault D. Viscosity of magma ocean and the primordial structure of Earth's silicate mantle. School of Earth Sciences, Zhejiang University, Feb., 2019.
- 4) **Xie L.**, Yoneda A., Yamazaki D., Manthilake G., Higo Y., Tange Y., Nicolas G., Andrew King, Andrault D. Viscosity of magma ocean and the primordial structure of Earth's silicate mantle. School of Earth Sciences, China University of Geosciences

(Wuhan), Feb., 2019.

- 5) **Xie L.**, Yoneda A., Manthilake G., Yamazaki D., Higo Y., Tange Y., Guignot N., Andrault D., Silicate melt viscosities at high pressure: Constraints on the Magma Ocean. Earth-life Science Institute (ELSI), Tokyo Technology Unver., Apr., 2018.
- 6) **Xie L.**, Yoneda A., Andrault D. Viscosity measurement of silicate melts up to the lower mantle conditions by in-situ falling sphere method. Bayerisches Geoinstitute, University of Bayreuth, Dec., 2017.
- 7) **Xie L.** and Yoneda A., Viscosity measurement of silicate melts by in situ falling sphere method down to the lower mantle conditions. Workshop on Materials Science under Ultra-High Pressure, Geodynamics Research Center, Ehime University, Mar., 2017.
- 8) **Xie L.**, Yoneda A., Viscosity measurement of silicate melts down to lower mantle using the falling sphere method. Laboratoire Magmas et Volcans, Clermont-Ferrand, November, 2016

Publication list

- 1) **Xie L.**, Yoneda, A., Liu, Z., Nishida, K., & Katsura, T. Boron-doped diamond synthesized by chemical vapor deposition as a heating element in a multi-anvil apparatus. High Press. Res., 40(3), 369-378, 2020.
- 2) Nishida, K., **Xie, L.**, Kim, E. J., & Katsura, T. A strip-type boron-doped diamond heater synthesized by chemical vapor deposition for large-volume presses. R. Sci. Instrum., 91(9), 095108, 2020.
- 3) **Xie L.**, Yoneda A., Xu F., Higo Y., Wang C., Tange Y., King A., Antonangeli D., Morard G., Guignot N. Boron-MgO composite as a X-ray transparent pressure medium in the Kawai high pressure apparatus. R. Sci. Instrum., 91, 043903, 2020.
- 4) Xu, F., **Xie, L.**, Yoneda, A., Guignot, N., King, A., Morard, G., Antonangeli, D. Ti-C-MgO composite: an X-ray transparent and machinable heating element in a multi-anvil high pressure apparatus. High Press. Res., 1-10, 2020.
- 5) **Xie L.**, Yoneda A., Manthilake G., Yamazaki D., Higo Y., Tange Y., Guignot N., Andrault D., Formation of bridgmanite-enriched layer at the top lower-mantle during Magma Ocean solidification. Nat. Comm., 11(1), 1-10, 2020.
- 6) Ozawa, H., Tateno, S., **Xie L.**, Nakajima, Y., Sakamoto, N., Kawaguchi, S.I., Yoneda, A., Hirao, N., Boron-doped diamond as a new heating element for internal resistive heated diamond-anvil cell, High Press. Res., 2018.
- 7) **Xie L.**, Yoneda A., Yoshino T., Yamazaki D., Tsujino N., Higo Y., Tange Y., Irifune T., Shimei T., Ito E., Synthesis of boron-doped diamond and its application as a heating material in a multi-anvil high-pressure apparatus, R. Sci. Instrum., 88,

093904, 2017.

- 8) Yoneda, A., Fukui, H., Gomi, H., Kamada, S., **Xie L.**, Hirao, N., Uchiyama, H., Tsutsui, S., Baron, A.Q.R., Single crystal elasticity of gold up to ~20 GPa: Bulk modulus anomaly and implication for a primary pressure scale, *Jpn. J. Appl. Phys.*, 56, 095801, 2017.
- 9) **Xie L.**, Yoneda A., Yoshino T., Fei H., Ito E., Graphite–boron composite heater in a Kawai-type apparatus: the inhibitory effect of boron oxide and countermeasures, *High Press. Res.*, 36, 105-120, 2016.
- 10) Yoneda A., **Xie L.**, Tsujino N., Ito E., Semiconductor diamond heater in the Kawai multianvil apparatus: an innovation to generate the lower-mantle geotherm, *High Press. Res.*, 34,392-403, 2014.