Tian Qin, Ph.D., Department of Earth Sciences, University of Minnesota
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Education

Ph.D. in Earth Sciences May 2019
University of Minnesota – Twin Cities, Minneapolis, MN, USA

Master of Science in Geophysics June 2014
University of Science and Technology of China Hefei, Anhui, China

Bachelor of Science in Geology June 2011
Nanjing University Nanjing, Jiangsu, China

Research

2014- current:

1. Ab initio study the structure and stability field of hydrous defects in forsterite.
2. Ab initio study of Fe isotope fractionation behavior in the lower mantle and core.
3. QHA, code development for quasi-harmonic free energy calculation for multi-configuration systems.

2011-2014:

4. Ab initio investigation of the Ca isotope fractionation between Ca-doped orthopyroxene(OPX) and clinopyroxene(CPX)
5. Ab initio study the stable isotopes fractionation of O, Si between minerals in crust and upper mantle (quartz, feldspar, pyroxene, olivine, zircon)
6. Ab initio Investigation of the V isotope fractionation behavior in the water solutions

Teaching

- ESCI 1001 Lab "Earth and Its Environment", TA at UMN (Fall 2014 - Spring 2016, 4 semesters)
- CSETALK, Instructor for new international TAs for Earth Sciences Dept., UMN (Summer 2016, 2017)

Professional experience

- Visiting student, LDEO, Columbia University, NY, USA (09/2017-07/2018)
- Visiting student, Beijing Computational Science Research Center, Beijing, China (10/2016 - 12/2016)
- Visiting student, Institute of Geochemistry, CAS, Guiyang, China (05/2013)

Honors and Awards

- Thomas Andrews Fellowship, Department of Earth Sciences, University of Minnesota (2018)
- Francis Gibson Fellowship, Department of Earth Sciences, University of Minnesota (2016)
- Scholarship of People, Nanjing University, Nanjing, China (2010).
- Outstanding Student of Field-Work in Zhou-Koudian, China University of Geoscience (2009).
- College Outstanding Student of social work, Nanjing University, Nanjing, China (2008).

Service

Reviewer of journal: GCA **(**Geochim. Cosmochim. Acta**)**

Publications

Published (* corresponding author)

1. **Qin, T.,** Zhang, Q., Wentzcovitch, R*., Umemoto, K., qha: A Python package for quasiharmonic free energy calculation for multi-configuration systems, Computer Physics Communications (2018), https://doi.org/10.1016/j.cpc.2018.11.003.
2. **Qin, T.,** Wentzcovitch, R.*., Umemoto, K., Hirschmann, M. M. & Kohlstedt, D. L. Ab initio study of water speciation in forsterite: importance of the entropic effect. Am. Mineral. (2018). doi:10.2138/am-2018-6262
3. Wang, W., **Qin, T.,** Zhou, C., Huang, S., Wu, Z*., Huang, F*., 2017. Concentration effect on equilibrium fractionation of Mg-Ca isotopes in carbonate minerals: insights from first-principles calculations. Geochim. Cosmochim. Acta. http://dx.doi.org/10.1016/j.gca.2017.03.023
4. Wang, W., Zhou, C., **Qin, T**., Kang, J.-T., Huang, S., Wu, Z*., Huang, F., 2017. Effect of Ca content on equilibrium Ca isotope fractionation between orthopyroxene and clinopyroxene. Geochim. Cosmochim. Acta 219, 44–56. https://doi.org/10.1016/j.gca.2017.09.022
5. **Qin, T**., Wu, F., Wu, Z*., Huang, F*., 2016. First-principles calculations of equilibrium fractionation of O and Si isotopes in quartz, albite, anorthite, and zircon. Contrib. to Mineral. Petrol. 171, 91. doi:10.1007/s00410-016-1303-3
6. Wu, F*., **Qin, T***., Li, X., Liu, Y., Huang, J.-H., Wu, Z., Huang, F., 2015. First-principles investigation of vanadium isotope fractionation in solution and during adsorption. Earth Planet. Sci. Lett. 426, 216–224. doi:10.1016/j.epsl.2015.06.048
7. Feng, C., **Qin, T.,** Huang, S., Wu, Z*., Huang, F*., 2014. First-principles investigations of equilibrium calcium isotope fractionation between clinopyroxene and Ca-doped orthopyroxene. Geochim. Cosmochim. Acta 143, 132–142. doi:10.1016/j.gca.2014.06.002

Submitted

1. Zhang, Z., **Qin, T**., Pommier, A., Hirschmann, M., Carbon Storage in Fe-Ni-S Liquids in the Deep Upper Mantle and its Relation to Diamond and Fe-Ni Alloy Precipitation.

In preparation

1. **Qin, T**., Marcondes, M., Wentzcovitch, R*., Shukla, G., Wu, Z., Iron isotope fractionation in the core formation.
2. **Qin, T***., Wentzcovitch, R*., Wu, Z., thermoisotope: A Python package to calculate the stable isotope fractionation factor from phonon density of state.

Talk/Poster

1. Qin, T., Wentzcovitch, R., Marcondes, and M., Shukla, G., Ab initio study of iron isotope fractionation during Earth's core-mantle segregation, 2019 APS March Meeting, Oral presentation.
2. Qin, T., Marcondes, M., Shukla, G., and Wentzcovitch, R., Iron isotope fractionation during Earth's core-mantle segregation. Fall 2018 AGU Abstract and Poster.
3. Zhang., Qi., Qin, T., Wentzcovitch, R., qha: A Python package for quasi-harmonic free energy calculation for multi-configuration systems., Fall 2018 AGU Abstract.
4. Luo, C., Wan, T., Cai, Z., Qin, T., Zhang, Qi., and Wentzcovitch, R., Stability field of δ-AlOOH investigated with ab-initio calculations. Fall 2018 AGU Abstract.
5. Zhuang, J., Wang, H., Zhang, Qi, and Wentzcovitch, R., Thermodynamic properties of ε-Fe at inner core conditions using T-dependent phonon dispersions. Fall 2018 AGU Abstract.

6. Zhang, Z., Qin, T., Pommier, M., and Hirchmann, M., Deep carbon storage in Fe-Ni-S melts and diamond formation. Fall 2018 AGU Abstract.
7. Qin, T., Wentzcovitch, R., and Umemoto, K., Ab initio study of water speciation in forsterite. 2018 APS March Meeting, Abstract and Poster.
8. Qin, T., Shukla, G., Wu, Z., Wentzcovitch, R., Effects of spin crossover on iron isotope fractionation in Earth's mantle. Fall 2017, AGU Abstract and Poster.
9. Qin, T., Wentzcovitch, R., Umemoto, K., Hirschmann, M., and Kohlstedt, D., Ab initio study of water speciation in forsterite, Summer 2017, COMPRES meeting, Abstract and Poster.,
10. Qin, T., Umemoto, K., Wentzcovitch, R., Hirschmann, M.,and Kohlstedt, D., "*Ab initio* study of hydrous Mg- and Si- vacancies in forsterite: their stability and IR signatures" Fall 2016, AGU Abstract and Poster.
11. Wu, Z., Wang, W., Qin, T., and Huang, F., 2016, The compositional effect on Ca-Mg isotope fractionations among carbonates: First-Principles Investigations. July 2016 Goldschmidt Conference, Abstract.
12. Qin, T., Wu, F., Wu, F., and Huang, F., First-principles investigation of equilibrium isotopic fractionation of Si and O isotope among quartz, albite, anorthite, orthoenstatite, clinoenstatite, olivine and zircon. Fall 2013 *AGU*, Abstract.