Peng Ni

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RESEARCH INTERESTS

- Understanding volatile cycles in the Earth's mantle through mineral and fluid inclusions in diamonds.
- Volatile budget of the lunar mantle, origin of different types of basaltic volcanism on the Moon, and evolution of the lunar interior.
- Combining experimental petrology and non-traditional isotope geochemistry to understand formation, differentiation, and evolution of Earth and other planetary bodies.
- Developing and improving column methods and mass spectrometry (MC-ICP-MS) techniques to enable non-traditional isotope measurements of small natural specimens and low-concentration experimental samples.
- Diffusion, kinetics and geospeedometry.

ACADEMIC POSITIONS

- **Department of Earth, Planetary, and Space Sciences, UCLA** — Los Angeles, CA
  Assistant Profesor — 2023 -
- **UCLA Meteorite Museum** — Los Angeles, CA
  Meteorite Committee member, interim curator — 2024 -
- **Earth and Planets Laboratory, Carnegie Institution for Science** — Washington, DC
  Carnegie Postdoctoral Fellow (Mentors: Anat Shahar, Steven B. Shirey) — 2017 - 2022
- **Department of Earth and Environmental Sciences, University of Michigan** — Ann Arbor, MI
  Graduate Student Researcher, Experimental Petrology Lab — 2011 - 2017
  Lab Assistant, Electron Microbeam Analysis Lab — 2014 - 2015
  Graduate Student Instructor — 2013 - 2017
- **School of Earth and Space Sciences, Peking University** — Beijing, China
  Undergraduate Researcher, Institute of Mineralogy and Petrology — 2008 - 2011

EDUCATION

- **University of Michigan** — Ann Arbor, MI
  Ph.D., Earth and Environmental Sciences — 08/2017
  Dissertation: Cu diffusion in silicate melts and melt inclusion study on volatiles in the lunar interior.
  Advisor: Prof. Youxue Zhang
- **Peking University** — Beijing, China
  B.S., Geoscience, School of Earth and Space Sciences — 07/2011

AWARDS AND HONORS

- **Society of Hellman Fellow** — 2024
  University of California, Los Angeles, CA
- **John Dorr Graduate Academic Achievement Award** — 2018
  Department of Earth and Environmental Sciences, University of Michigan, Ann Arbor, MI
- **Carnegie Postdoctoral Fellowship** — 2017
  Geophysical Laboratory, Carnegie Institution for Science, Washington, DC
- **Scott Turner Award (three times)** — 2014, 2015, 2016
  Department of Earth and Environmental Sciences, University of Michigan, Ann Arbor, MI
- **Rackham Summer Fellowship** — 2015
  Department of Earth and Environmental Sciences, University of Michigan, Ann Arbor, MI

- **First Prize, Michigan Graduate Union poster competition** 2015
  University of Michigan, Ann Arbor, MI
- **Rackham Travel Grant (twice)** 2014, 2015
  University of Michigan, Ann Arbor, MI
- **May Fourth Scholarship** 2009, 2010
  Awarded to top 10% of the students, Peking University, Beijing
- **Kwang-hua Scholarship** 2008
  Awarded to top 10% of the students, Peking University, Beijing

PROPOSALS, GRANTS AND FELLOWSHIPS

- **"A comprehensive isotope study on the origin of lunar volcanic glass beads," NASA, Solar System Workings ($742,745), PI** 2025 - 2028
  Department of Earth, Planetary, and Space Sciences, UCLA
- **"Behavior of Moderately Volatile Elements During Silicate Evaporation," NSF, Division of Earth Sciences ($431,384), PI** 2025 - 2028
  Department of Earth, Planetary, and Space Sciences, UCLA
- **"The Fate of Earth's Plates: Sublithospheric Diamond Constraints on Recycling in Earth's Mantle Transition Zone", NSF, Division of Earth Sciences ($501,000)** 2020 - 2023
  Collaborator with PI S. Shirey, PN role: development and application of Fe isotope techniques for diamond inclusions
  Earth and Planets Laboratory, Carnegie Institution for Science
- **Carnegie Postdoctoral Fellowship, $140,000 for stipend and $6,000 for research** 2017 - 2019
  Geophysical Laboratory, Carnegie Institution for Science
- **Scott Turner Award for research (Three times), total budget $9,000** 2014 - 2016
  University of Michigan, Ann Arbor
- **Rackham Summer Fellowship, $8,000 for stipend** 2015
  Rackham Graduate School, University of Michigan, Ann Arbor
- **Rackham Travel Grant, $800 to $1,200 each** 2014, 2015
  Rackham Graduate School, University of Michigan, Ann Arbor

BEAMTIME AWARDS AT DOE FACILITIES

- **GUP-1014690:** *Synchrotron X-ray diffraction analysis of mineral inclusions in sublithospheric diamonds*, **PI, total shifts awarded: 12** 2025
  Advanced Photon Source, Argonne National Lab
- **GUP-1009678:** *Investigating the role of Cr and ferric Fe contents on Fe force constants of mantle spinels using NRIXS*, **Co-I (PI Nie), total shifts awarded: 18** 2025
  Advanced Photon Source, Argonne National Lab
- **GSECARS GUP-80140:** *Characterizing multi-phase microinclusions within sublithopsheric diamonds from Juina, Brazil*, **Participant (PI Czas), total shifts awarded: 12** 2022
  Advanced Photon Source, Argonne National Lab
- **GSECARS GUP-42672:** *Mechanism and kinetics of oxygen fugacity change in silicate melts: a XANES study on iron reducing profiles in silicate melts*, **PI, total shifts awarded: 12** 2015
  Advanced Photon Source, Argonne National Lab

PUBLICATIONS

[20] Elazar, O., Weiss, Y., **Ni, P.**, and Shirey, S. B. (In revision), Metasomatic fluids from subducted oceanic crust: evidence from isotopic composition of potassium in Sierra Leone diamonds. *Earth and Planetary Science Letters.*

[19] **Ni, P.**, Shirey, S. B., Walter, M. J., Czas, J., Novella, D., Nestola, F., Kueter, Nico, Smith E. M., Stachel, T., Pearson, D. G., Steele, A., Gardner, L. L., Jacobsen, S. D., Harte, B., Harris, J. W., and Shahar, A. (In press), Evidence for the onset of slab mantle melting in Earth's lower mantle from ferropericlase in superdeep diamonds. *Science Advances.*

[18] Zhu, K., Yamaguchi, A., Sossi, P. A., Bouvier, A., Chen, L., and **Ni, P.**. (In press), High-energy impact and vapor recondensation history of angrite parent body revealed by nickel isotopes. *Proceedings of the National Academy of Sciences.*

[17] Nie, N. X., Shahar, A., **Ni, P.**, Carlson, R. W., Shirey, S. B., Sio, C. K., Hu, J. Y., Regula, A., Prissel, K., Hu, M. Y., Zhao, J., Lavina, B., and Alp, E. E. (2025), Equilibrium Fe isotope fractionation between olivine, pyroxene, spinel, and MORB glass: Implications for mantle partial melting to generate MORBs. *Geochemica et Cosmochimica Acta, 403*, 130-151.

[16] **Ni, P.**, Zhan, Y., Chabot, N. L., Ryan, C. J., Zhu, K., Nie, N. X., Shirey, S. B., Shahar, A. (2024), Copper isotope fractionation during asteroid core solidification. *Geochemical Perspective Letters, 31*, 49-53.

[15] McCubbin, F. M., Barnes, J. J., **Ni, P.**, Hui, H., Klima, R. L., Burney, D., Day J. M. D., Magna, T., Boyce, J. W., Tartese, R., Vander Kaaden, K. E., Steenstra, E., Elardo, S. M., Zeigler, R. A., Anand, M., and Liu, Y. (2023) Endogenous lunar volatiles. *Reviews in Mineralogy and Geochemistry, 89*, 729-786.

[14] **Ni, P.** and Shahar, A. (2023), Copper isotope fractionation by diffusion in a basaltic melt. *Earth and Planetary Science Letters, 624*, 118459.

[13] Zhang, B., Lehnert, K. A., Rubin, A. E., McKeegan, K. D., Warren, P. H., Mays, J. L., Johansson, A. K., **Ni, P.**, Young, E. D., Kyte, F. T., Liu, M-C., Dunham, E. T., Tang, H., Ji, P., and Figueroa-Salazar, J. D. (2023) The UCLA Cosmochemistry Database. *Scientific Data, 10*, 874.

[12] **Ni, P.**, Shahar, A., Badro, J., Yang, J., Bi, W., Zhao, J., Hu, M. Y., and Alp, E. E. (2022), Planet size controls Fe isotope fractionation between mantle and core. *Geophysical Research Letters, 49*, 20.

[11] Dottin, J. W., Farquhar, J., Kim, S. T., Shearer, C., Wing, B., Sun, J., and **Ni, P.** (2022), Isotopic evidence of sulfur photochemistry during lunar regolith formation. *Geochemical Perspective Letters, 23*, 38-42.

[10] Chen, S., **Ni, P.**, Zhang, Y., and Gagnon, J. (2022), The partitioning of trace elements between olivine and basaltic melt in lunar samples. *American Mineralogist, 107*, 1519-1531.

[9] Smith, E. M., **Ni, P. (co-first & co-corresponding author)**, Shirey, S. B., Richardson, S. H., Wang, W., and Shahar, A. (2021), Iron isotopes trace seawater-altered peridotite recycled into Earth's convecting mantle. *Science Advances, 7*, eabe9773.

[8] **Ni, P.**, Macris, C. A., Darling, E. A., Shahar, A. (2021), Evaporation induced Cu isotope fractionation during tektite formation: Insights from vaporization experiments. *Geochemica et Cosmochimica Acta, 298*, 131-148.

[7] **Ni, P.**, Fiege, A., Zhang, Y., Newville, M., and Lanzirotti, T. (2021), Rapid reduction of MORB glass by H_2 diffusion in graphite capsule experiments - a XANES study. *Contributions to Mineralogy and Petrology, 176*, 1-18.

[6] **Ni, P.**, Chabot, N. L., Ryan C. J., and Shahar, A. (2020), Heavy iron isotope composition of iron meteorites explained by core crystallization. *Nature Geoscience, 13*, 611-615.

[5] **Ni, P.**, Zhang, Y., Guan, Y. and Gagnon, J. (2019). A melt inclusion study on volatile abundances in the lunar interior. *Geochemica et Cosmochimica Acta, 249*, 17-41.

[4] **Ni, P.**, Zhang, Y. and Guan, Y. (2017). Volatile loss during homogenization of lunar melt inclusions. *Earth and Planetary Science Letters, 478*, 214-224.

[3] **Ni, P.**, Zhang, Y., Simon, A. and Gagnon, J. (2017). Cu and Fe diffusion in rhyolitic melts during chalcocite "dissolution": Implications for porphyry ore deposits and tektites, *American Mineralogist, 102(6)*, 1287-1301.

[2] Yang, Y., Zhang, Y., Simon, A., and **Ni, P.** (2016). Cassiterite dissolution and Sn diffusion in silicate melts of variable water content. *Chemical Geology, 441*, 162-176.

[1] **Ni, P.**, and Zhang, Y. (2016). Cu diffusion in a basaltic melt. *American Mineralogist, 101(6)*, 1474-1482.

SELECTED CONFERENCE ABSTRACTS

[20] **Ni, P.**, Liu, Y., Shirey, S. B., and Shahar, A. Iron isotope composition of the bulk Moon–Insights from measurements of individual volcanic glass beads. *Lunar and Planetary Science Conference*, 03/2025.

[19] **Ni, P.**, and Zhan, Y. Volatile degassing and thermal history of the Apollo 17 fire fountain eruption products. *Lunar and Planetary Science Conference*, 03/2025.

[18] **Pham, E.**, **Ni, P.**, Zhang S., and Zhang, B. An online iron meteorite classification tool. *Lunar and Planetary Science Conference*, 03/2025.

[17] Chen, S., Czas, J., **Ni, P.**, Shirey, S. B., and Stixrude, L., Constraints on Diamond Depths of Origin From Fe-Mg Partitioning. *GSA Annual Meeting*, 09/2024.

[16] **Ni, P.**, Elazar, Oded, Shirey, S. B., and Weiss, Y., Understanding diamond-forming fluids and parental lithology using Fe, Mg, and K isotopes. *12th International Kimberlite Conference*, 07/2024.

[15] **Ni, P.**, Shirey, S. B., Czas, J., Novella, D., Nestola, F., Kueter, N., Stachel, T., Pearson, D. G., Smith, E. M., Shahar, A. and Walter, M. J., Sublithospheric diamonds record carbonate-mantle interaction from ferropericlase Fe and Mg isotopic compositions. *AGU Fall Meeting*, 12/2023.

[14] **Ni, P.**, Shahar, A., Liu, Y., Nie, N., Young, E., and Shirey, S. B., Revisiting Iron Isotope Systematics of the Earth-Moon system. *Goldschmidt*, 7/2022.

[13] **Ni, P.**, Shahar, A., Badro, J., Yang, J., Bi, W., Zhao, J., Hu, M. Y., and Alp, E. E., Iron isotope fractionation during core formation suppressed by disproportionation. *AGU Fall Meeting*, 12/2021.

[12] [**Invited**] **Ni, P.**, Shahar, A., and Zhang, Y., Copper isotope fractionation by diffusion in silicate melts. *Goldschmidt Conference*, 07/2021.

[11] **Ni, P.**, Macris, C. A., Darling, E. A., and Shahar, A., Evaporation and isotope fractionation during tektite formation: insights from vaporization experiments. *Lunar and Planetary Science Conference*, 03/2020.

[10] **Ni, P.**, Chabot, N. L., Ryan, C. J., and Shahar, A., Copper Isotope Fractionation During Solid-Liquid Metal Equilibrium. *Goldschmidt Conference*, 08/2019.

[9] **Ni, P.**, Chabot, N. L., Ryan, C. J., and Shahar, A. Iron isotope fractionation during asteroidal core crystallization. *Lunar and Planetary Science Conference*, 03/2019.

[8] Chen, S., **Ni, P.**, Zhang, Y., and Gagnon, J. Elemental partitioning between olivine and melt inclusion in lunar samples. *Lunar and Planetary Science Conference*, 03/2019.

[7] Macirs, C. A., **Ni, P.**, Darling, E. A., Shahar, A., and Young, E. Evaporation induced isotope fractionation in tektites: an experimental study. *GSA Annual Meeting in Indianapolis*, 11/2018.

[6] McCubbin, F. M., Liu, Y., Barnes, J. J., Anand, M., Boyce, J. W., Burney, D., Day, J. M. D., Elardo, S. M., Hui, H., Klima, R. L., Magna, T., **Ni, P.**, Steenstra, E., Tartese, R., and Vander Kaaden, K. E. Endogenous Lunar Volatiles. *New Views of the Moon 2 - Asia*, 04/2018.

[5] **Ni, P.**, and Zhang, Y. Testing the possibility of a volatile-enriched origin for sample 74220. *Lunar and Planetary Science Conference*, 03/2018.

[4] [**Invited**] **Ni, P.**, Zhang, Y., Fiege, A., Newville, M., Lanzirotti, A. Rapid reduction of MORB glass in piston cylinder experiments with graphite capsule - a XANES study. *AGU Fall meeting*, 12/2017

[3] **Ni, P.**, Zhang, Y., and Guan Y. Melt inclusion study on water and other volatiles in the lunar mantle. *AGU Fall meeting*, 12/2016

[2] **Ni, P.**, Zhang, Y., Simon, A., and Gagnon, J. Cu and Fe diffusion in rhyolitic melts during chalcocite "dissolution". *Goldschmidt Conference*, 08/2015

[1] **Ni, P.** and Zhang, Y. Cu diffusion in basaltic melts. *Goldschmidt Conference*, 06/2014

INVITED SEMINARS

- Department of Earth Science, University of California in Santa Barbara, CA 01/2025
- School of Earth and Space Exploration, Arizona State University, AZ 04/2024
- Department of Earth and Environmental Sciences, University of Michigan, Ann Arbor, Michigan 04/2024
- Palos Verdes Gem & Mineral Society, Rolling Hills Estates, CA 07/2023
- SCRIPPS, University of California in San Diego, CA 06/2023
- Division of Geological and Planetary Sciences, California Institute of Technology, Pasadena, CA 04/2023
- Department of EPSS, University of California in Los Angeles, CA 03/2022
- Geology Department, West Washington University, Bellingham, Washington 11/2021

- Department of Earth and Environmental Sciences, University of Michigan, Ann Arbor, Michigan 10/2021
- Natural History Museum, London, England 03/2021
- Center for Meteorite Studies, Arizona State University, Tempe, Arizona 11/2020
- Department of Geology, University of Maryland, College Park, Maryland 03/2020
- Smithsonian National Museum of Natural History, Washington DC 02/2020
- Lamont-Doherty Earth Observatory, Columbia University, New York 09/2019
- Guangzhou Institute of Geochemistry, Chinese Academy of Sciences, Guangzhou, China 05/2018
- The Institute of Geology and Geophysics, Chinese Academy of Sciences, Beijing, China 04/2018
- School of Earth and Space Sciences, University of Science and Technology of China, Hefei, China 03/2018
- School of Earth Sciences, China University of Geosciences, Wuhan, China 03/2018
- Department of Geology, University of Maryland, College Park, Maryland 02/2018
- School of Earth Sciences and Engineering, Nanjing University, Nanjing, China 07/2016

FIELD EXPERIENCE

- Igneous Petrology class field trip, Long-valley volcanic system, Bishop, CA (4 days) 2025
- Andes Mountain, Atacama Dessert and porphyry-type ore deposits, Chile (2 weeks) 2015
- Advanced Ore Deposits course field trip, Upper Peninsula, MI (1 week) 2014
- Keweenaw Peninsula, Northern Michigan, sedimentary petrology, ore deposit formation, MI (1 week) 2014
- Southern Dabie Mountains field trip for undergrad research, eclogite sampling, Anhui, China (1 week) 2010
- Mountain Wutai and Mountain Heng field trip, Hubei, China (2 weeks) 2010
- Regional geological mapping, Xingcheng, Liaoning, China (2 weeks) 2009

TEACHING EXPERIENCES

- EPSS 103A, Igneous Petrology 2025
- EPSS 107/207, Isotope Geochemistry 2023, 2025
- EPSS 109/209, Isotope Geochemistry 2023, 2024
- Mini Courses, Graduate Student Instructor Winter 2017
- Principles of Geochemistry, Graduate Student Instructor Winter 2016
- Principles of Geochemistry, Graduate Student Instructor Winter 2015
- Introduction to Linux Computation, Graduate Student Instructor Fall 2014
- Introduction to Physical Geology, Graduate Student Instructor Winter 2014
- Principles of Geochemistry, Graduate Student Instructor Fall 2013
- Introduction to Linux Computation, Graduate Student Instructor Winter 2013

LEADERSHIP EXPERIENCES AND PUBLIC SERVICE

- Elected Committee member, NSF Synchrotron Earth and Environmental Science (SEES) 2025 - 2027
- At-Large Committee member, Extraterrestrial Materials Assessment Group (ExMAG) 2024 - 2026
- AGU Fall Meeting Committee member, Study of the Earth's Deep Interior 2022 - 2025
- Session convener and chair, Lunar and Planetary Science Conference 2025
- LPI Small Sample Handling Workshop, Selection Committee, member 2024
- Lunar Exploration and Analysis Group, Science Goal Committee, member 2024
- Session convener and chair at Goldschmidt 2022 2022, 2024
- Panelist, NASA proposal review panel 2020, 2021, 2025
- Invited panelist, virtual career panel for international students in Earth sciences, *University of Michigan* 12/2020
- Volunteer at *Black in Physics* virtual job fair 11/2020
- Representative of *Carnegie Institution Postdoc Association* 2017 - 2019
- Attending scientist at donor event "Lunch with a Scientist", *Carnegie Institution for Science* 07/2019
- Session convener and chair at AGU 2018: *Volatile Budgets and Cycling Through Planetary Evolution* 12/2018
- Volunteer for *USA Science and Engineering Festival*, Washington DC 04/2018
- Judge for Dwornik Student Presentation Award at *Lunar and Planetary Science Conference* 03/2018
- President of *Peking University Alumni Association in Ann Arbor* 2013 - 2015
- Referee for *French National Research Agency (ANR), Geology, Contributions to Mineralogy and Petrology, Earth and Planetary Science Letters, Geochemica et Cosmochimica Acta, Minerals*