

Shaofan Che, Ph.D.

Department of Earth and Planetary Sciences
University of New Mexico
221 Yale Blvd NE
Albuquerque, NM 87131

Email: shaofanche@unm.edu
Phone: +1 (505) 203-9163

EDUCATION

Ph.D., Earth and Planetary Sciences, University of New Mexico, USA, December 2020.

- Advisor: Dr. Adrian J. Brearley.

M.S., Geology, China University of Geosciences (Wuhan), China, June 2016.

- Advisor: Dr. Long Xiao.

B.S., Geology, China University of Geosciences (Wuhan), China, June 2013.

- Advisor: Dr. Long Xiao.

PROFESSIONAL APPOINTMENTS

Research Scientist, 07/2023 – present.

Department of Earth and Planetary Sciences, University of New Mexico, USA.

- Research projects: The analysis of the components of chondritic meteorites using advanced transmission electron microscope (TEM) techniques.

Postdoctoral Research Associate, 05/2021 – 06/2023.

Lunar and Planetary Laboratory, University of Arizona, USA.

- Research projects: Atomic-scale analysis of samples returned from the Hayabusa mission and analogs of those to be returned by Hayabusa 2 and OSIRIS-Rex.

Postdoctoral Research Associate, 01/2021 – 04/2021.

Department of Earth and Planetary Sciences, University of New Mexico, USA.

- Research project: TEM analytical work on synthetic Al-bearing condensate smokes to model the vapor condensation processes in astronomical environments.

Research Assistant, 06/2019 – 12/2020.

Department of Earth and Planetary Sciences, University of New Mexico, USA.

- Research projects: (1) Microstructural constraints on the formational and alteration histories of calcium-aluminum-rich inclusions from CV3 chondrites; (2) Fine chromite inclusions in Martian shergottite olivines and their implications for the thermal and redox history of the Martian mantle.

Research Assistant, 09/2013 – 06/2016.

Planetary Science Institute, School of Earth Sciences, China University of Geosciences (Wuhan), China.

- Research project: Petrology and mineralogy of several HED meteorite samples, the systematics of Fe/Mn ratios of their olivine and pyroxene, and the implications for the early differentiation history of the HED parent body.

Lab Assistant, 09/2013 – 06/2016.

Planetary Science Institute, School of Earth Sciences, China University of Geosciences (Wuhan), China.

- Responsible for preparing meteorite sample thin sections for electron microscope studies.

TEACHING EXPERIENCE

Teaching Assistant, 08/2016 – 05/2019.

Department of Earth and Planetary Sciences, University of New Mexico, USA.

- Mineralogy for undergraduate students, Fall 2016, 2017 and 2018.
- Petrology for undergraduate students, Spring 2017, 2018 and 2019.

Teaching Assistant, 09/2014 – 06/2015.

School of Earth Sciences, China University of Geosciences (Wuhan), China.

- Comparative Planetary Petrology for undergraduate students, Fall 2014.
- Mineralogy and Petrology for undergraduate students, Spring 2015.

HONORS AND SCHOLARSHIPS

- Graduation with distinction, University of New Mexico, 12/2020.
- The University of New Mexico Research Assistantship, 06/2019 – 12/2020.
- Gorham International Scholarship, 2018.
- UNM EPS Alumni International Scholarship, 2017, 2019.
- The University of New Mexico Teaching Assistantship, 08/2016 – 05/2019.
- China University of Geosciences Teaching Assistantship, Spring 2015, Fall 2014.
- China University of Geosciences Scholarship, 2013-2014, 2014-2015, First Prize.

PUBLICATIONS

Peer-reviewed Journal Articles:

- Che S.**, Domanik K. J., Chang Y. J., and Zega T. J. (2023). The important role of fluid chemistry in the hydrothermal alteration of ordinary chondrites: Insights from halite and sphalerite in the Sidi El Habib 001 (H5) meteorite. *Earth and Planetary Science Letters*, 621, 118374.
- Che S.** and Zega T. J. (2023). Hydrothermal fluid activity on asteroid Itokawa. *Nature Astronomy*, <https://doi.org/10.1038/s41550-023-02012-x>.
- Che S.**, Domanik K. J., and Zega T. J. (2023). In-situ formation of halite in the Sidi El Habib 001 (H5) ordinary chondrite: Implications for hydrothermal alteration in ordinary chondrite parent bodies. *Geochimica et Cosmochimica Acta*, 348, 85-106.
- Che S.** and Brearley A. J. (2021). An evolutionary condensation sequence revealed by mineralogically-distinct nodules in fine-grained, spinel-rich inclusions from CV3 chondrites: Implications for the genetic links between different types of non-igneous refractory inclusions. *Geochimica et Cosmochimica Acta*, 308, 75–100.
- Che S.** and Brearley A. J. (2021). Microstructures of enstatite in fine-grained CAIs from CV3 chondrites: Implications for mechanisms and conditions of formation. *Geochimica et Cosmochimica Acta*, 296, 131–151.
- Che S.** and Brearley A. J. (2021). The formation and alteration history of a forsterite-bearing Type C CAI from Allende: Evidence for a Type B CAI precursor, and implications for fluid-assisted metasomatism on the CV chondrite parent body. *Geochimica et Cosmochimica Acta*, 293, 277–307.

Conference Abstracts:

- Che S.**, Domanik K. J., and Zega T. J. (2023). Halite and Sphalerite in the Sidi El Habib 001 (H5) Ordinary Chondrite:

Insights into Microchemistry-Controlled Hydrothermal Alteration on its Parent Body. *54th Lunar and Planetary Science Conference*, Abstract #1208.

- Che S.** and Zega T. J. (2022). In-situ Formation of Halite in the Sidi El Habib 001 Ordinary Chondrite. *85th MetSoc*, Abstract #6012.
- Che S.** and Zega T. J. (2022). NaCl in an Itokawa Particle: Terrestrial or Asteroidal? *53rd LPSC*, Abstract #1041.
- Che S.**, Brearley A. J., Shearer C. K. (2021). Late-Stage Oxidation of Yamato 980459 Shergottite: Evidence from Chromite + Silica Trails in Olivine. *52nd LPSC*, Abstract #1136.
- Che S.** and Brearley A. J. (2020). Microstructures of Low-Ca Pyroxene in Fine-Grained CAIs from CV3 Chondrites: Implications for Mechanisms and Conditions of Formation. *51st LPSC*, Abstract #1256.
- Che S.** and Brearley A. J. (2020). The Role of Microchemical Environments in the Alteration of Wark-Lovering Rims on Allende Melilite-Rich Calcium-Aluminum-Rich Inclusions. *51st LPSC*, Abstract #1257.
- Che S.** and Brearley A. J. (2019). A Complex Evolution Sequence Revealed by the Textures of Fine-Grained, Spinel-Rich Inclusions from the Leoville CV3 Chondrites: A Genetic Link Between Fluffy Type-A CAIs, Spinel-Rich Inclusions, and Amoeboid Olivine Aggregates. *50th LPSC*, Abstract #1486.
- Che S.**, Brearley A. J., Shearer C. K. (2019). Possible Formation Mechanisms of Chromite and Melt Inclusion Trails in Yamato 980459 Shergottite Olivine: Implications for Its Thermal History. *50th LPSC*, Abstract #1947.
- Che S.** and Brearley A. J. (2018). The Role of Fluid in the Formation of the Iron-Alkali-Halogen Zoning Sequence in an Allende Type C CAI. *49th LPSC*, Abstract #2922.
- Che S.** and Brearley A. J. (2017). The Origin of Alkali-Halogen Zonal Sequence in an Allende Type C CAI. *80th MetSoc*, Abstract #6324.
- Che S.** and Brearley A. J. (2017). Textural Evidence for a FoB-Like Precursor and a Multiple Evolution History of an Allende Forsterite-Bearing Type C CAI. *48th LPSC*, Abstract #2414.
- Che S.**, He Q., and Xiao L. (2015). NWA 7188 Euclite: Petrology, Chemical Compositions and Evolution History. *46th LPSC*, Abstract #1084.

JOURNAL PAPER REVIEWS

Reviewer for Nature Astronomy, The Planetary Science Journal, Meteoritics & Planetary Science.

MEDIA ARTICLES

Pass the salt: This space rock holds clues as to how Earth got its water. UArizona News.

<https://news.arizona.edu/story/pass-salt-space-rock-holds-clues-how-earth-got-its-water>

Salt from space could explain where Earth got its water. Arizona Daily Star, front page article.

https://tucson.com/news/local/subscriber/university-of-arizona-space-research/article_7a96f860-0bb8-11ee-a9cd-e3f7ed859031.html#:~:text=Samples%20collected%20by%20Hayabusa%20are,at%20the%20University%20of%20Arizona.&text=The%20find%20could%20bolster%20the,long%20ago%20inside%20space%20rock

Asteroid sample prompts reexamination of where Earth got its water. KJZZ.

<https://kjzz.org/content/1849567/asteroid-sample-prompts-reexamination-where-earth-got-its-water>

Asteroid Itokawa Once Supported a Hydrothermal System. Planetary News.

https://www.lpi.usra.edu/planetary_news/2023/06/20/asteroid-itokawa-once-supported-a-hydrothermal-system/

Salty 'peanut' asteroid may reveal where Earth got its water. Space.com.

<https://www.space.com/asteroids-sun-hayabusa-itokawa-earth-water>

How did Earth get its water? New clues discovered in an asteroid sample. MSN.com.

<https://www.msn.com/en-us/news/technology/how-did-earth-get-its-water-new-clues-discovered-in-an-asteroid-sample/ar-AA1cw6Q9?ocid=Peregrine>