

Zeyang Sun, Ph.D.

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RESEARCH INTERESTS

I am deeply interested in a range of scientific disciplines, including clumped isotopes, paleoclimate, mass extinctions, terrestrial environments, and carbonate preservation and diagenesis. My long-term research goal is to examine geochemical proxies and the co-evolution of environment and ecology throughout Earth's history.

EDUCATION

Ph.D., Geology	Department of Geology and Geophysics, Texas A&M University Dissertation: Carbonate Clumped Isotope Reordering from an Atomic Approach: Heating Experiment, Kinetic Modeling, and Application Advisor: Ethan Grossman	2017–2024
B.S., Geology (Hons)	School of Earth Sciences and Engineering, Nanjing University Thesis: Geochemical Features of Carbonates from Gaoyuzhuang Formation and Tieling Formation of North China: Implications for the Redox Conditions of Paleo-Ocean Advisor: Hong-Fei Lin	2013–2017

PROFESSIONAL EXPERIENCE

Graduate Assistant Researcher in Clumped Isotope Geochemistry Department of Geology and Geophysics, Texas A&M University Advisors: Ethan Grossman, William Defliese (Co-advisor, 2017-2019)	2017–2024
Research Internship in Metal Isotope Geochemistry Department of Earth and Planetary Sciences, Yale University Advisors: Noah Planavsky, Xiangli Wang (Co-advisor)	2016

PUBLICATIONS (*DENOTES EQUAL CONTRIBUTION)

Accepted & Published	[3] Sun, Z.* , Perez-Beltran, S.*, Zaheer, W.*, Defliese, W. F., Banerjee, S., and Grossman, E. L.: Clumped isotope reordering kinetics in strontianite and witherite: experiments and first-principles simulations, <i>Earth and Planetary Science Letters</i> 624, p. 118467, 2023. DOI: 10.1016/j.epsl.2023.118467.
	[2] Perez-Beltran, S.*, Zaheer, W.*, Sun, Z.* , Defliese, W. F., Banerjee, S., and Grossman, E. L.: Density functional theory and ab initio molecular dynamics reveal atomistic mechanisms for carbonate clumped isotope reordering, <i>Science Advances</i> 9, eadf1701, 2023. DOI: 10.1126/sciadv.adf1701.
	[1] Sun, Z. , Wang, X., and Planavsky, N.: Cr isotope systematics in the Connecticut River estuary, <i>Chemical Geology</i> 506, pp. 29–39, 2019. DOI: 10.1016/j.chemgeo.2018.12.034.

PRESENTATIONS

Conference Submissions	[7] Sun, Z. , Perez-Beltran, S., Defliese, W. F., Banerjee, S., and Grossman, E. L.: Reassessment of calcite clumped isotope preservation using water-facilitated clumped isotope resetting, Oral, in: <i>Goldschmidt</i> , Chicago, IL, USA, Aug. 2024.
	[6] Sun, Z. , Perez-Beltran, S., Defliese, W. F., Banerjee, S., and Grossman, E. L.: Revisiting clumped isotope resetting in calcites with internal water and organic matter, Oral, in: <i>International Clumped Isotope Workshop</i> , Long Island, NY, USA, Aug. 2024.
	[5] Sun, Z. , Maupin, C. R., Perez-Beltran, S., Zaheer, W., Defliese, W. F., Banerjee, S., and Grossman, E. L.: The role of internal water in carbonate clumped isotope resetting, Oral, in: <i>GSA Connects 2023 Meeting</i> , Pittsburgh, PA, USA, Oct. 2023.
	[4] Sun, Z. , Defliese, W. F., and Grossman, E. L.: The kinetics of clumped isotope reordering of synthetic inorganic carbonates, Poster, in: <i>AGU Fall Meeting</i> , New Orleans LA, USA, Dec. 2021.

- [3] **Sun, Z.**, Defliese, W. F., and Grossman, E. L.: The kinetics of clumped isotope reordering of synthetic inorganic carbonates, Poster, in: *GSA Connects 2021 Meeting*, Portland, OR, USA, Oct. 2021.
- [2] **Sun, Z.**, Defliese, W. F., and Grossman, E. L.: The kinetics of clumped isotope reordering of synthetic inorganic carbonates, Flash Talk, in: *Goldschmidt*, Lyon, France (Virtual), July 2021.
- [1] **Sun, Z.**, Defliese, W. F., and Grossman, E. L.: Reconstructing thermal histories of the Oklahoma, Illinois and Moscow basins using clumped isotopes of mid-Carboniferous brachiopods, Poster, in: *International Clumped Isotope Workshop*, Los Angeles, CA, USA, Jan. 2019.

HONORS AND AWARDS

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| [6] | Student Research Award (2nd Place)
Geology and Geophysics Graduate Society Symposium, TAMU | 2024 |
| [5] | ConocoPhillips/HEEP Endowed Graduate Fellowship
Department of Geology and Geophysics, TAMU | 2022 |
| [4] | Petroleum and Sedimentary Systems Scholarship , Berg-Hughes Center, TAMU | 2018 |
| [3] | Honor of Outstanding Graduate , Nanjing University (NJU) | 2017 |
| [2] | Pandeng Earth Sciences Scholarship
NJU and Institute of Geology and Geophysics, Chinese Academy of Sciences | 2015 |
| [1] | Qihang Earth Sciences Scholarship , School of Earth Sciences and Engineering, NJU | 2014 |

TEACHING EXPERIENCE

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| Teaching Assistant | <ul style="list-style-type: none"> [2] Preparing lab session materials, explaining the principle of the IRMS and the carbonate device, and training students to perform carbonate clumped isotope analysis.
Course: GEOL 648 Stable Isotope Geology (Spring 2024 and 2022, Fall 2018), TAMU
Project: Clumped Isotopes of Modern Benthic Foraminifera (Spring 2024) [1] Preparing class materials, addressing questions, guiding experimental design and instrument use, and tutoring data analysis and visualization with Julia language.
Course: GEOL 450 Geology Senior Project & GEOS 405 Environmental Geosciences (Spring 2023), TAMU
Project: Impact of Gas Stove Usage on Indoor Air Quality and Health |
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PROFESSIONAL EXPERIENCE, ENGAGEMENT AND ACTIVITIES

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| Reviewer | <ul style="list-style-type: none"> [1] <i>Science Advances</i> (1), <i>Chemical Geology</i> (1), <i>Palaeo3</i> (1) | 2024 |
| Field Trips | <ul style="list-style-type: none"> [2] Permian Reef Complex and Guadalupe Mountain, USA [1] Late Ordovician Outcrops, Cincinnati Arch Region, USA | 2018
2018 |
| Outreach | <ul style="list-style-type: none"> [4] Geology and Geophysics Undergraduate Summer School, TAMU
“How to give an oral presentation and academic conference experiences” [3] Chemistry Open House for students, kids, and families
“Thermometer in the shell” [2] Ions@WORK Mass Spectrometry Symposium [1] Mass Spectrometry for Isotopic Analysis Subunit Open House | 2024
2019, 2018
2018
2018 |

SKILLS

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| Instrument Techniques | <ul style="list-style-type: none"> Including operation, troubleshooting, maintenance, and training [1] Thermo Scientific™ 253Plus IRMS [2] Thermo Scientific™ Kiel IV Carbonate Device with customized PPQ Trap |
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- [3] Field Emission SEM, CL Microscopy, FTIR Microscopy
- [4] High Temperature Conversion Elemental Analyzer
- [5] Manual Glass Vacuum Line

Programming Julia, Python, MATLAB®

DOCTORAL PROGRAM COURSES

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| [9] | CHEM 648 Principles of Quantum Mechanics | Fall 2019 |
| [8] | OCNG 641 Inorganic Aquatic Geochemistry | Spring 2019 |
| [7] | GEOL 648 Stable Isotope Geology | Fall 2018 |
| [6] | CHEM 621 Chemical Kinetics | Spring 2018 |
| [5] | GEOL 658 Earth Systems Through Deep Time:
Global Change, Paleoclimate, and Life | Spring 2018 |
| [4] | OCNG 689 Cenozoic Paleoclimate | Spring 2018 |
| [3] | OCNG 655 Experimental Design and Analysis in Oceanography | Fall 2017 |
| [2] | OCNG 640 Chemical Oceanography | Fall 2017 |
| [1] | GEOL 681 Stable Isotope Methods and Research: Clumped Isotope | Fall 2017 |

REFEREES

Ethan Grossman | Professor and Michel T. Halbouty Chair
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