

Haolin Zhou

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Research Interest: C-S-O cycling (surface), biogeochemistry, critical zone process, carbon dioxide removal

ACADEMIC APPOINTMENTS

Michel T. Halbouty '30 Postdoctoral Fellow | Texas A&M University College Station, TX | Jan 2026 - Present
Primary Mentor: Lucien Nana Yobo

EDUCATION

Ph.D. in Earth Science | Rice University Houston, TX | Aug 2020 - Dec 2025
Thesis Advisor: Mark A. Torres

M.S. in Geological Sciences | University of Alberta Edmonton, Alberta, Canada | Aug 2017 - Jul 2020
Thesis Advisor: Nicholas B. Harris

B.S. in Geological Engineering | China University of Petroleum (Beijing) Beijing, China | Sep 2013 - Jun 2017

PUBLICATIONS

Choi, H., Ramos, E.J., Torres, M.A., Jemison, N.E., Ibarra, D.E., Muñoz, S., Tompkins, H., Mock, C.E., Suquino, K., Kemeny, P.C., Winnick, M.J., Williams, K.H., **Zhou, H.** (in prep.). Lithology shapes both landscape form and secondary mineral formation in alpine watersheds: Evidence from dissolved $\delta^7\text{Li}$ values in the East River, Colorado, USA. *Geochimica et Cosmochimica Acta*

Zhou, H., Negi, P., Ramos, E.J., Nutt, M.R., Shiller, J., Costin, G., Simon, S.R., Scheingross, J.S., Torres, M.A. (in review). Stratigraphy impacts the net carbon budget of shale weathering: insights from field observation and numerical simulation. *Earth and Planetary Science Letters*

Preoteasa, L., Vespremeanu-Stroe, A., Tutuiianu, L.F., Hanganu, D., Formácková, A., Hamerlík, L., Jakab, G., Ilie, M., Manailescu, C., Popescu, R.A., Vasile, A., Stoicescu, D., **Zhou, H.**, Magyari, E. (in review.). The Bâlea Lake Record: 15,000 Years of Debris-Flow Activity and Alpine Sedimentation Sensitivity to Climate and Human-Induced Ecological Change. *Catena*

Jemison, N.E., Winnick, M.J., Muñoz, S., Ibarra, D., Torres, M.A., **Zhou, H.**, Williams, K.H., Ramos, E.J. (in review.). Reconciling the role of clay mineral formation on net alkalinity: Insights from reactive transport models of shale, granite, and basalt. *Geochimica et Cosmochimica Acta*

Zhou, H., Costin, G., Birdwell, J.E., Hackley, P.C., Minisini, D., Terlier, T., Torres, M.A. (2025). Using the X-ray spectrum of carbon in electron micro-probe analysis to determine thermal maturity of organic matter in mudstones. *Geostandards and Geoanalytical Research*. DOI: 10.1111/ggr.12611

Zhou, H., Torres, M.A., Harris, N.B., Costin, G., Terlier, T. (2024). Apportioning the molybdenum budget in shales to improve paleoenvironmental interpretations. *Geochimica et Cosmochimica Acta*, 369. DOI: 10.1016/j.gca.2024.01.027

Zhou, H., Harris, N.B., Dong, T., Ayranci, K., Feng, J., Rivard, B., Hackley, P.C., Hatcherian, J. (2021). New insights into organic matter accumulation from high-resolution geochemical analysis of a black shale: Middle and Upper Devonian Horn River Group, Canada. *GSA Bulletin*, 134(7-8). DOI: 10.1130/B36091.1

GRANTS

Michel T. Halbouty '30 Postdoctoral Fellowship, Texas A&M University (\$138,000 USD)	2026-2028
Grants-in-Aid, American Association of Petroleum Geologists Foundation (\$5,500 USD)	2022, 2025
Graduate Student Research Grant (Outstanding Mention), Geological Society of America (\$2,500 USD)	2022

AWARDS

Leroy Caleb Gibbon Award, Rice University	2026
First Prize of Presentation of Surface Analysis & SIMS workshop	2023
Department Travel Award, Rice University	2021-2025
The Second Prize Scholarship, China University of Petroleum (Beijing)	2015
Merit Student of China University of Petroleum (Beijing)	2013

TEACHING & MENTORING

Teaching Assistant

ESCI321 Planetary Surface Processes	Fall 2023
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Mentoring

<i>RET - Rice University</i>	Summer 2025
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Mentored a middle-school physical teacher, Mila Taylor, from the Research Experience for Teachers (RET) Program for the summer project on quantifying the link between mineralogy and grain size in sedimentary rocks

<i>Undergraduate Honors Thesis - Rice University</i>	Fall 2023 - Spring 2024
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Mentored Rice undergraduate student, Valentina Osorio (now at University of Colorado Boulder), for lab work and research related to rainwater chemistry

<i>NSF-REU - Rice University</i>	Summer 2023
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Mentored NSF-REU undergraduate student, Jacob Shiller (Pitzer College), for the research project on understanding C cycle in shale weathering through aqueous and rock geochemistry in Santa Ynez Mountains, California

<i>SURF - Rice University</i>	Summer 2023
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Mentored Rice undergraduate student, Ibana Delgado, for the Summer Undergraduate Research Fellowships (SURF) program, to work on understanding how secondary minerals modulate organic carbon preservation in soils in the Upper Deschutes Basin, Oregon

WORKSHOPS

Evidence-Based Undergraduate Teaching (Certificate)	2026
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Texas A&M University, College Station, Texas

Postdoctoral Mentoring Academy Fellow (Certificate)	2026
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Texas A&M University, College Station, Texas

Surface Analysis & SIMS workshop	2023
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Rice University, Houston, Texas

Reactive Transport Modeling HUB	2023
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Colorado School of Mines, Gordon, Colorado

IsoCamp	2023
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University of New Mexico, Albuquerque, New Mexico

Visual Communication Symposium	2023 & 2024
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Rice University, Houston, Texas

Workshop of Essentials for Understanding Unconventional Mudrock Plays	2019
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AAPG, San Antonio, Texas

PROFESSIONAL ACTIVITIES

Convener

Earth Surface Processes and the Global Carbon Cycle, AGU Fall Meeting

2026

Peer Reviewer

Chemical Geology, Marine Chemistry, GSA Bulletin, Applied Geochemistry, IMAGE2024

2021 - Present

INVITED TALKS

Weekly Seminar Speaker Series, Department of Geology and Geophysics, Texas A&M University

2026

SELECTED ABSTRACTS (recent 3 years)

Zhou, H., Negi, P., Ramos, E.J., Nutt, M.R., Shiller, J., Scheingross, J.S., Torres, M.A., Stratigraphic variations in mineralogy affect the carbon budget of shale weathering. *American Geophysical Union, Fall Meeting 2025*

Scheingross, J.S., Nutt, M.R., Robinson, M.J., Duvall, A., Granger, D., Heimsath, A., Kirby, E., Torres, M.A., **Zhou, H.** Influence of tectonics and lithology on topographic form spanning millennial and million-year timescales in the Santa Ynez Mountains, Transverse Ranges, CA. *American Geophysical Union, Fall Meeting 2024*

Negi, P., **Zhou, H.**, Scheingross, J.S., Torres, M.A., Poulson, S. Topographic controls on atmospheric CO₂ release from shale weathering. *American Geophysical Union, Fall Meeting 2024*

Zhou, H., Ramos, E.J., Negi, P., Nutt, M.R., Scheingross, J.S., Torres, M.A. Potential competition between pyrite and petrogenic carbon oxidation during shale weathering. *Goldschmidt Conference, 2024*

Zhou, H., Torres, M.A., Scheingross, J.S., Costin, G., Harris, N.B., Birdwell, J.E., Hackley, P.C., Minisini, D. Combining bulk-rock and microanalytical approaches to interpret the interplay between mudstone geochemistry and Earth surface processes. *Gordon Research Conference, Geobiology, 2024*

Zhou, H., Nutt, M.R., Shiller, J., Torres, M.A., Scheingross, J.S. Preliminary results quantifying the effects of stratigraphic heterogeneity on the CO₂ budget for shale weathering. *American Geophysical Union, Fall Meeting 2023*

Zhou, H., Torres, M.A., Costin, G., Minisini, D., Birdwell, J.E., Hackley, P.C. Changes in carbon K α peak spectrum: A novel method to estimate organic matter thermal maturity using an electron probe microanalyzer. *IMAGE 2023*

SKILLS

Analytical: TQ-ICP-MS, Q-ICP-MS, MC-ICP-MS, EPMA, micro-XRF, portable EDXRF, ToF-SIMS, Ion Chromatography, XRD, SEM, Raman Microscopy, XPS, Elemental Analyzer, Orbitrap

Coding: MATLAB, CrunchTope, R, Python, LaTeX

SERVICE & OUTREACH

Annual Research Symposium

Department of Geology & Geophysics, TAMU | 2026

Serve as judge for undergraduate and graduate research presentations (oral and poster)

Undergraduate Research Scholars Symposium

TAMU | 2026

Serve as Active Listener to provide feedback for undergraduate research projects across Texas A&M University

Teacher Professional Development

Houston Independent School District(HISD)-Rice-NASA | 2024

Help STEM educators (middle school) to develop class content

Middle School Planetary Exploration Day

HISD-Rice-NASA | 2024

Guide student rotations through interactive classroom modules on planetary science

GeoUnion

Rice | 2021-2022

Help the communications between students and faculty and organize intra- and inter-departmental events