Hao Xie

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EDUCATION

PhD in geochemistry 2021
California Institute of Technology

MSc in geochemistry 2017
California Institute of Technology

BSc in geochemistry 2015
University of Science and Technology of China (Special Class for the Gifted Young)

APPOINTMENTS

Postdoctoral Fellow, Pennsylvania State University 09/2021–now

Postdoctoral Researcher, Caltech 07/2021–09/2021

AWARDS and GRANTS

Agouron Geobiology Postdoctoral Fellowship ($142,000)
Agouron Institute 2021

Facility Training Grant, Center for Environmental Microbial Interactions ($2000)
Caltech 2018

Cyrus Tang Scholarship For Personal Development and Community Service ($2485)
USTC 2011-2015

Outstanding Student Scholarship ($700)
USTC 2011-2015

TEACHING

Teaching Assistant, Ge 101 Introduction to Geology and Geochemistry, *Caltech* Fall 2018-2019

Teaching Assistant, Ch/Ge 127 Nuclear Chemistry, *Caltech* Fall 2017-2018

Teaching Assistant, Ge 1 Earth and Environment, *Caltech* Spring 2016-2017

PROFESSIONAL REFERENCES

John Eiler, Robert P. Sharp Professor of Geology and Geochemistry at Caltech
eiler@gps.caltech.edu

Katherine Freeman, Evan Pugh University Professor at Penn State
khf4@psu.edu

Alex Sessions, Professor of Geobiology at Caltech
sessions@caltech.edu

PUBLICATIONS Peer-reviewed:

Xie H., Formolo M. and Eiler J. (2022) Predicting Isotopologue Abundances of the Products of Organic Catagenesis. In press at *Geochimica et Cosmochimica Acta,*

Xie H., Dong G., Formolo M., Lawson M., Liu J., Cong F., Mangenot X., Shuai Y., Ponton C. and Eiler J. (2021) The evolution of intra- and inter-molecular isotope equilibria in natural gases with thermal maturation. *Geochimica et Cosmochimica Acta,* 307, 22–41.

Xie H., Ponton C., Formolo M. J., Lawson M., Ellis G. S., Lewan M. D., Ferreira A. A., Morais E. T., Spigolon A. L. D., Sessions A. L. and Eiler J. M. (2020) Position-specific distribution of hydrogen isotopes in natural propane: effects of thermal cracking, equilibration and biodegradation. *Geochimica et Cosmochimica Acta,* 290, 235–256.

Xie H., Ponton C., Formolo M.J., Lawson M., Peterson B.K., Lloyd M.K., Sessions A.L. and Eiler J.M., 2018. Position-specific hydrogen isotope equilibrium in propane. *Geochimica et Cosmochimica Acta*, 238, pp.193-207.

Thiagarajan N., **Xie H.**, Ponton C., Kitchen N., Peterson B., Lawson M., Formolo M., Xiao Y. and Eiler J.M., 2020. Isotopic evidence for quasi-equilibrium chemistry in thermally mature natural gases. *Proceedings of the National Academy of Sciences*, 117(8), pp.3989-3995.

Dong, G., **Xie, H.**, Formolo, M., Lawson, M., Sessions, A., and Eiler, J. (2021). Clumped isotope effects of thermogenic methane formation: insights from pyrolysis of hydrocarbons. *Geochimica et Cosmochimica Acta*.

Shuai, Y., **Xie, H.**, Zhang, S., Zhang, Y., & Eiler, J. M. (2021). Recognizing the pathways of microbial methanogenesis through methane isotopologues in the subsurface biosphere. *Earth and Planetary Science Letters*, 566, 116960.

Tyne, R.L., Barry, P.H., Lawson, M., Byrne, D.J., Warr, O., **Xie, H.**, Hillegonds, D.J., Formolo, M., Summers, Z.M., Skinner, B. and Eiler, J.M., 2021. Rapid microbial methanogenesis during CO2 storage in hydrocarbon reservoirs. *Nature*, 600(7890), pp.670-674.

Jautzy, J., Douglas P. M., **Xie, H.**, Eiler J.M., and Clark I.D. (2021) CH4 isotopic ordering records ultra-slow hydrocarbon biodegradation in the deep subsurface. *Earth and Planetary Science Letters*, 562, 116841.

Thiagarajan N., Kitchen N., **Xie H.**, Ponton C., Lawson M., Formolo M. and Eiler J.M. (2020) Identifying thermogenic and microbial methane in deep water Gulf of Mexico Reservoirs. *Geochim. Cosmochim. Acta* 275, 188–208.

Eiler J. M., Clog M., Lawson M., Lloyd M., Piasecki, A., Ponton C., and **Xie H.** (2018). The isotopic structures of geological organic compounds. *Geological Society, London, Special Publications,* 468(1), 53-81.

Product literature

I co-authored to two product literature by Thermo Fischer Scientific. Both can be found at: https://www.thermofisher.com/order/catalog/product/0723316#/0723316

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Application Note: Clumped Methane Isotope Analysis using HR-IRMS (2020).

White Paper: Clumped Isotope Analysis of Methane using HR-IRMS: New Insights into Origin and Formation Mechanisms of Natural Gases and a Potential Geothermometer (2020).

CONFERENCE PRESENTATIONS (SELECTED)

Xie, H., Dong, G., Thiagarajan, N., Shuai, Y., Mangenot, X., Formolo, M.J., Lawson, M., Eiler J.M., Tracking origin and evolution of natural methane with clumped isotopologues. Goldschmidt, 2022 (invited).

Xie, H., Dong, G., Thiagarajan, N., Shuai, Y., Mangenot, X., Formolo, M.J., Lawson, M. and Eiler, J.M., Methane Clumped Isotopologues With High-resolution Gas Source Isotope Ratio Mass Spectrometry. AGUFM, 2019 (invited)

Xie, H., Formolo, M.J., Eiler, J.M., Predicting Isotopomer Distribution in Products of Thermal Cracking with a Kinetic Monte-Carlo Model. Goldschmidt, 2020.

Xie, H., Ponton, C., Formolo, M.J., Lawson, M., Sessions, A.L. and Eiler, J.M., Position-specific hydrogen isotope distribution in natural propanes: thermal cracking, equilibration and biodegradation. Goldschmidt, 2019.

Xie, H., Dong, G., Formolo, M.J., Lawson, M., and Eiler, J.M., Formation mechanisms of thermogenic methane revealed from 13CH3D and 12CH2D2 measurements. International Clumped Isotope Workshop, 2019.

Xie, H., Formolo, M.J., Lawson, M., Peterson, B.K., Sattler, A., Sessions, A.L. and Eiler, J.M., Hydrogen isotope equilibria in C1-C5 alkanes. Goldschmidt, 2018.

COMMUNITY SERVICE AND PUBLIC OUTREACH

Journal reviewer: Geochimica et Cosmochimica Acta; Nature Communications; Journal of Geophysical Research: Biogeosciences; Chemical Geology; International Journal of Coal Geology; Science Bulletin.

Mentor of Asian Americans and Pacific Islanders in Geosciences (AAPIiG)'s Mentoring Pods Program (2022).

Reviewer of Graduate Women In Science (GWIS) Fellowship application (2021).

Public speech at Ganzhou Houde Foreign Language School (2021).