

Hao Xie

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| EDUCATION | PhD in geochemistry <i>California Institute of Technology</i> | 03/2021 |
| | MSc in geochemistry <i>California Institute of Technology</i> | 2017 |
| | BSc in geochemistry <i>University of Science and Technology of China (Special Class for the Gifted Young)</i> | 2015 |
| APPOINTMENT S | Postdoctoral Fellow, Pennsylvania State University | 09/2021–now |
| | Postdoctoral Researcher, Caltech | 07/2021–09/2021 |
| AWARDS and GRANTS | Agouron Geobiology Postdoctoral Fellowship (\$142,000) <i>Agouron Institute</i> | 2021 |
| | Facility Training Grant, Center for Environmental Microbial Interactions (\$2000) <i>Caltech</i> | 2018 |
| | Cyrus Tang Scholarship For Personal Development and Community Service (\$2485) <i>USTC</i> | 2011-2015 |
| | Outstanding Student Scholarship (\$700) <i>USTC</i> | 2011-2015 |
| TEACHING | Teaching Assistant, Ge 101 Introduction to Geology and Geochemistry, <i>Caltech</i> | Fall 2018-2019 |
| | Teaching Assistant, Ch/Ge 127 Nuclear Chemistry, <i>Caltech</i> | Fall 2017-2018 |
| | Teaching Assistant, Ge 1 Earth and Environment, <i>Caltech</i> | Spring 2016-2017 |

PUBLICATIONS Peer-reviewed:

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>.

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
PRESENTA-
TIONS
(SELECTED)**

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., 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 (invited talk), 2019, pp.V14B-05.
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 $^{13}\text{CH}_3\text{D}$ and $^{12}\text{CH}_2\text{D}_2$ 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: Journal of Geophysical Research: Biogeosciences; Chemical Geology.

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

Public speech at Ganzhou Houde Foreign Language School