Dr. Jian Gong

Postdoctoral Associate Researcher
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EDUCATION

Ph.D. Geology, Texas A&M University, College Station, 2015
B.S. Engineering Physics, University of California, Berkeley, 2009

APPOINTMENTS

2018– Massachusetts Institute of Technology, Cambridge, MA, USA
Postdoctoral Associate, Department of Earth, Atmospheric and Planetary Sciences

2015–18 Institut de Physique du Globe de Paris, Paris, France
Postdoctoral Investigator, Division of Geomicrobiology

RESEARCH AREAS

Earth and planetary sciences, Geology, Sedimentology, Geochemistry, Biosignatures, Biomineralization, Origin of life, Microfossils, Microbial cultures, Bioinformatics, Optical & fluorescence microscopy, Petrology & minerology, Electron Microscopy, Raman, infrared and X-ray spectroscophy, Experimental data science methods, Sensors and robotic instrumentation, Fluid mechanics, Field and laboratory experimental techniques in sedimentary geology and microbiology.

COURSES TAUGHT

Texas A&M University

Sedimentology, Teaching assistant, Lab instructor

Global Geophysics, Teaching assistant

Biogeology, Teaching assistant

PUBLICATIONS

Journal Articles

2022 Kelsey Moore, Mirna Daye, **Jian Gong**, Ken Williford, Kurt Konhauser and Tanja Bosak. "The record of biological-environmental interactions preserved in Proterozoic carbonate-hosted chert". Geobiology, GBI-017-2022. Accepted.

2022 Emilie Skoog, Kelsey Moore, **Jian Gong**, Davide Ciccarese, Lily Momper, Elise Cutts, Tanja Bosak. "Metagenomic, (bio)chemical, and microscopic analyses reveal the potential for the cycling of sulfated EPS in Shark Bay pustular mats". ISME Communications, 21-00271AR-Z. Accepted.

2022 Elise M. Cutts, Matthew J. Baldes, Emilie J. Skoog, James Hall, **Jian Gong**, Kelsey R. Moore, Tanja Bosak. "Using Molecular Tools to Understand Microbial Carbonates". MDPI Geosciences. Accepted.

2021 **Jian Gong**, Carolina Munoz-Saez, Dylan T. Wilmeth, Kimberly D. Myers, Martin Homann, Gernot Arp, John Roma Skok and Mark A. van Zuilen. "Morphogenesis of digitate structures in hot spring silica sinters of the El Tatio geothermal field, Chile". Geobiology, 20, 137-155. (doi:10.1111/gbi.12471)

2021 Tanja Bosak, Kelsey R. Moore, **Jian Gong** and John P. Grotzinger. "Searching for biosignatures in sedimentary rocks from early Earth and Mars". Nature Reviews Earth & Environment, 2, 490-506. (doi:10.1038/s43017-021-00169-5)

2021 Kelsey R. Moore, **Jian Gong**, Mihkel Pajusalu, Emilie J. Skoog, Megan Xu, Tania F. Soto, Victor Sojo, Thomas Matreux, Matthew J. Baldes, Dieter Braun, Kenneth Williford and Tanja Bosak. "A new model for silicification of cyanobacteria in Proterozoic tidal flats." Geobiology, 19(5), 438-449. (doi:10.1111/gbi.12447).

2021 Joti Rouillard, Martin J. van Kranenkonk, Stefan Lalonde, **Jian Gong** and Mark A. van Zuilen. "Correlating trace element compositions, petrology, and Raman spectroscopy data in the 3.46 Ga Apex chert, Pilbara Craton, Australia". Precambrian Research, 366, 106415. (doi:10.1016/j.precamres.2021.106415)

2020 **Jian Gong**, Kimberly D. Myers, Carolina Munoz-Saez, Martin Homann, Joti Rouillard, Richard Wirth, Anja Schreiber and Mark A. van Zuilen. "Formation and Preservation of Microbial Palisade Fabric in Silica Deposits from El Tatio, Chile". Astrobiology, 20, 500-524. (doi:10.1089/ast.2019.2025)

2020 Kelsey R. Moore, Mihkel Pajusalu, **Jian Gong**, Victor Sojo, Thomas Matreux, Dieter Braun and Tanja Bosak. "Biologically mediated silicification of marine cyanobacteria and implications for the Proterozoic fossil record". Geology, 48(9), 862-866. (doi:10.1130/G47394.1).

2019 Joti Rouillard, Juan Manuel Garcia-Ruiz, Linda Kah, Emmanuelle Gerard, Laurie Barrier, Sami Nabhan, **Jian Gong** and Mark A. van Zuilen. "Identifying microbial life in rocks: Insights from population morphometry". Geobiology, 18(3), 282-305. (doi:10.1111/gbi.12377).

2019 Silvina Slagter, Martin Reich, Carolina Munoz-Saez, John Southon, Diego Morata, Fernando Barra, **Jian Gong** and J.R. Skok. "Environmental controls on silica sinter formation revealed by radiocarbon dating". Geology, 47, 330-334. (doi:10.1130/G45859.1).

2018 Martin Homann, Pierre Sansjofre, Mark A. van Zuilen, Christoph Heubeck, **Jian Gong**, Bryan Killingsworth, Ian S. Foster, Alessandro Airo, Martin J. Van Kranendonk, Magali Ader and Stefan V. Lalonde. "Microbial life and biogeochemical cycling on land 3,220 million years ago". Nature Geoscience, 11(9), 665-71. (doi:10.1038/s41561-018-0190-9).

2018 Joti Rouillard, Juan Manuel Garcia-Ruiz, **Jian Gong** and Mark A. van Zuilen. "A morphogram for silicawitherite biomorphs and its application to microfossil identification in the early Earth rock record". Geobiology. 16(3), 279-96. (doi:10.1111/gbi.12278).

2011 Michael M. Tice, Daniel C. O. Thornton, Michael C. Pope, Thomas D. Olszewski, and **Jian Gong**. "Archean microbial mat communities". Annual Review of Earth and Planetary Sciences, 39, 297-319. (doi:10.1146/annurev-earth-040809-152356).

Manuscripts in Preparation

2022 **Jian Gong** "The habitability of rocky planets". Astronomy. IntechOpen, ISBN 978-1-80356-120-2. Editor: Dr. Yann Chemin. Book Chapter. In Prep.

2022 **Jian Gong**, Kevin Cannon, Jules Gardener, Sirine Fakra, Kelsey Moore and Tanja Bosak. "Amorphous phases and sedimentary structures produced in experimental analogs of Martian mudstones". In Prep.

2022 **Jian Gong**, Kevin Cannon, Joel Hurowitz, Kathryn M. Stack, Benjamin P. Weiss and Tanja Bosak. "Rapid release of molecular hydrogen during anaerobic weathering of basaltic glass". In Prep.

2022 Juliet Ramey-Lariviere, **Jian Gong**, Tania Bosak and Sara B. Pruss. "Evidence for Biologically Influenced Precipitation in Ooids from Shark Bay, Western Australia". In Prep.

CONFERENCE PRESENTATIONS

2022 **Jian Gong**, Carolina Munoz-Saez, Dylan T. Wilmeth, Kimberly D. Myers, Martin Homann, Gernot Arp, John R. Skok, Mark A. van Zuilen. "Morphogenesis of digitate structures in hot spring silica sinters of the El Tatio geothermal field, Chile". Invited speaker at special workshop: "Geochemobrionics": Self-Organization in Geological Systems. University of Edinburgh (UK).

2021 **Jian Gong**, Kevin Cannon, Jules Gardener, Sirine Fakra, Kelsey Moore and Tanja Bosak. "Formation of amorphous clay-mineral precursors and sedimentary structures in experimental analogs of Martian sediments". Simons Collaboration on the Origin of Life Symposium. Talk. Online/Remote.

2020 **Jian Gong**, Kevin Cannon, Joel Hurowitz, Kathryn M. Stack, Benjamin P. Weiss and Tanja Bosak. "Rapid release of molecular hydrogen during anaerobic weathering of basaltic glass". Goldschmidt Meeting. Talk. Online/Remote.

2019 **Jian Gong** and Tanja Bosak. *Probing the Formation and Preservation of Biosignatures in Basalt-derived Fine Sediments*. Simons Collaboration on the Origin of Life Symposium. Poster. New York City, USA.

2018 **Jian Gong**, Kimberly D. Myers, Carolina Munoz and Mark A. van Zuilen. "Artificial diagenesis of sheathed cyanobacteria in silica sinters from hot springs of El Tatio, Chile". Astrobiology Australasia Meeting, Invited Talk, Rotorua, New Zealand.

2018 **Jian Gong**, Martin Homann, Christoph Heubeck, Mike Tice and Mark van Zuilen. "A geologic perspective on the evolution of Bacterial multicellularity during the Paleoarchean". 7th International Student Conference on Microbial Communication. Poster. Jena, Germany.

AWARDS AND CERTIFICATES

Fellowships and Scholarships

2015 NASA Astrobiology Summer School on the Origin of Life, Santander, Spain, 1 week, Full scholarship

2011-13 Chevron Fellowship co. Berg-Hughes Center for Petroleum and Sedimentary Systems $50,000 for two years

2005-08 University of California Regents' Fellowship

Certificates

2019 MIT Kauffman Teaching Certificate: Semester-long interactive workshop dedicated to improve teaching skills, with a focus on evidence-based teaching techniques. Topics include designing a course, preparing a lesson plan, assessing and providing feedback to students, creating an effective and welcoming classroom climate, etc.

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