

Name: Sujoy Mukhopadhyay

Employer: University of California Davis,
One Shields Avenue, Davis, CA 95616, USA

History of employment

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| Professor, Geochemistry, U. California Davis | 2014-present |
| Associate Professor, Geochemistry, Harvard University | 2009-2014 |
| Assistant Professor, Geochemistry, Harvard University | 2003-2009 |
| Postdoctoral Fellow, Carnegie Institution of Washington | 2001-2003 |

Degrees

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| California Institute of Technology, Pasadena, CA, USA | Ph.D. Geochemistry, 2001 |
| Indian Institute of Technology, Kharagpur, India | M.Sc. Applied Geology, 1995 |
| Presidency College, University of Calcutta, India | B.Sc. Geology with Honors, 1992 |

Research Interests

My research is focused on understanding the formation and evolution of habitable planets including feedbacks and linkages between processes operating within the deep interior and the planet's surface. Through innovative developments in measuring noble gases in a variety of Earth and planetary materials, combined with geochemical modeling, I investigate science questions related to planet formation, volatile evolution of terrestrial planets, formation of atmospheres on terrestrial planets, early Earth conditions, geochemical evolution of the Earth's mantle, magma degassing, and volatile exchange between the Earth's surface and the solid earth.

Selected Publications

Peron S., and Mukhopadhyay S., Pre-subduction mantle noble gas elemental pattern reveals larger missing xenon in the deep interior compared to the atmosphere. *Earth Planet Sci Lett.*, in press.

Peron S., and Mukhopadhyay S., Krypton in Chassigny meteorite shows Mars accreted chondritic volatiles before nebular gases. *Science*, in press.

Peron S., Mukhopadhyay S., Kurz M. D., Graham D. Deep mantle krypton anomaly reveals Earth's early accretion of carbonaceous matter, *Nature* 600, 462-467, 2021.

Parai R., Mukhopadhyay S, Tucker J. M., and Pető M. K. The emerging portrait of an ancient, heterogeneous and continuously evolving mantle plume source. *Lithos* 346-347, doi: doi.org/10.1016/lithos.2019.105153, 2019.

Mukhopadhyay S. and Parai R. Noble gases: A record of Earth's evolution and mantle dynamics. *Annual Review of Earth and Planetary Sciences* 47, 389-417, 2019.

Williams C. D. and Mukhopadhyay S. Capture of nebular gases during Earth's accretion is preserved in deep mantle neon. *Nature* 565, 78-81, 2019.

Parai R. and Mukhopadhyay S. Xenon isotopic constraints on the history of volatile recycling into the mantle. *Nature* 560, 223-227, 2018.

Tucker J. M., Mukhopadhyay S., and Gonnermann H. Reconstructing mantle carbon and noble gas contents from degassed mid-ocean ridge basalts. *Earth and Planetary Science Letters* 496, 108-119, 2018.

Schlichting H. and Mukhopadhyay S. Atmospheric impact losses. *Space Science Reviews* 214, doi:10.1007/s11214-018-0471-z, 2018.

Tucker, J. M. and Mukhopadhyay, S. Evidence for multiple magma ocean outgassing and atmospheric loss episodes from mantle noble gases. *Earth and Planetary Science Letters*, 393, 254-265, 2014.

Pető M., Mukhopadhyay, S. and Kelley, K. A. Heterogeneities from the first 100 million years recorded in deep mantle noble gases from the Northern Lau Back-arc Basin. *Earth and Planetary Science Letters* 369, 13-23, 2013.

Parai R., Mukhopadhyay S. and Standish J. Heterogeneous upper mantle Ne, Ar and Xe isotopic compositions and a possible Dupal noble gas signature recorded in basalts from the Southwest Indian Ridge. *Earth and Planetary Science Letters* 359, 227-239, 2012.

Mukhopadhyay, S. Early differentiation and volatile accretion recorded in deep-mantle neon and xenon. *Nature* 486, 101-104, 2012.

Parai R. and Mukhopadhyay S. How large is the subducted water flux? New constraints on mantle regassing rates. *Earth and Planetary Science Letters* 317-318, 396-406, 2012.

Gonnermann H. M. and Mukhopadhyay S. Preserving high concentrations of noble gases in a convecting mantle. *Nature* 459, 560-563, 2009.

Gonnermann H. M. and Mukhopadhyay S. Non-equilibrium degassing and a primordial source for helium in ocean-island volcanism. *Nature* 449, 1037-1040, 2007.

Mukhopadhyay S., Farley K. A., and Montanari A. A short duration of the Cretaceous-Tertiary boundary event: evidence from extraterrestrial helium-3. *Science* 291, 1952-1955, 2001.

Selected Honors

2013 Gast Lectureship for outstanding contributions to geochemistry, jointly awarded by the European Association of Geochemistry and the Geochemical Society.

2001 Carnegie Postdoctoral Fellowship.

2001 Everhart Distinguished Graduate Student Lecture at Caltech.

1998 Richard H. Jahns Graduate Teaching Award for outstanding achievement as a graduate teaching assistant, Division of Geological and Planetary Sciences, Caltech.

1995 Institute Silver medal from the Indian Institute of Technology on being judged the best student among the graduating class in Applied Geology.

Professional Affiliations

American Geophysical Union
Geochemical Society