SUNITA R. SHAH

Geology and Geophysics Department, Woods Hole Oceanographic Institution
MS #8, 266 Woods Hole Road, Woods Hole, MA 02543-1539
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EDUCATION

Ph.D. **Harvard University** Cambridge, MA
Department of Earth and Planetary Sciences, 2008
Principal Advisor: Ann Pearson

A.M. **Harvard University** Cambridge, MA
Earth and Planetary Sciences, 2006

M.S. **University of Michigan** Ann Arbor, MI
Atmospheric and Space Sciences, 2001

B.A. **Columbia University** New York, NY
Biochemistry, 1999

KCCAMS Facility, UC Irvine
Radiocarbon in Ecology and Earth System Science Short Course, 2007

PROFESSIONAL EXPERIENCE

NOSAMS Postdoctoral Scholar

Woods Hole Oceanographic Institution Woods Hole, MA
Geology and Geophysics Department, 2010 – present
Sponsors: Dr. Ann P. McNichol & Dr. Benjamin A. S. Van Mooy
Projects: Isotopic analysis of intact polar lipids from the Arctic Ocean and Sargasso Sea & Radiocarbon Analysis of Small Samples

National Research Council Postdoctoral Associate

U.S. Naval Research Laboratory Washington, D.C.
Materials Science and Technology & Marine Geosciences, 2009 – 2010
Advisors: Dr. Kenneth S. Grabowski & Dr. Richard B. Coffin
Projects: Radiocarbon as a tracer for bacterial and archaeal carbon metabolism & Development and calibration of laser-based radiocarbon instrument

Marine Geochemistry Technician

U.S. Geological Survey Woods Hole, MA

Costal and Marine Science Center, 1999-2000

Advisors: Dr. Marilyn R. Bucholtz ten Brink & Dr. Michael H. Bothner

Project: Contaminated sediments of Long Island Sound and Massachusetts Bay

RESEARCH INTERESTS

Carbon metabolism of uncultivable archaeal groups; Microbially-mediated carbon cycling in sedimentary and water-column environments; Isotopic signatures of microbial carbon metabolisms; Improved understanding of tetraether-based paleo-proxies; Novel techniques and instrumentation for radiocarbon and stable carbon isotopic measurement of individual biomarker compounds.

FUNDING AND AWARDS

2010-2012	NOSAMS Postdoctoral Scholar Fellowship, WHOI
2010	MARUM Fellowship, Center for Marine Environmental Sciences, Bremen – declined
2009-2010	National Research Council RAP Postdoctoral Award, NRL Directors Fund
2008	NSF Dissertations in Chemical Oceanography Symposium (DISCO) XXI
2006	NOSAMS Graduate Student Internship, WHOI – partial award
2005	Alfred W. Stickney Fellowship, EPS Department, Harvard University
2001	Biosphere-Atmosphere Research and Training Fellowship, NSF-IGERT – declined
2000-2001	Rackham Engineering Award, U. of Michigan College of Engineering
1999	Brian Bent Award for Excellence in Teaching, Chemistry Dept., Columbia University

TEACHING EXPERIENCE

2006	Teaching Fellow, Core Curriculum – The Atmosphere, Harvard University
2005	Teaching Fellow, Core Curriculum – How to Build a Habitable Planet, Harvard Univ.
2002	Instructor, Earth System Science high school enrichment program, Columbia Univ.
2002	Teaching Assistant, Climate and Hydrology section, MPA program, Columbia Univ.
1999	Lab Instructor, Organic Chemistry Lab, Columbia University

1998-1999 Lab Instructor, General Chemistry Lab, Columbia University

1998 Teaching Assistant, Data Structures and Algorithms in C, Columbia University

PEER-REVIEWED PUBLICATIONS

Close, H.G., **Shah, S.R.**., Ingalls, A.E., Diefendorf, A.F., Brodie, E.L., Freeman, K.H., Aluwihare, L.I., Pearson, A. Carbon isotopic evidence for contribution of small particles to the biological pump. In review at *Nature Geoscience*

Shah, S.R., Joye, S.B., McNichol, A.P. Carbon isotopic evidence for microbial control of carbon supply to Orca Basin, Gulf of Mexico. In review at *Biogeosciences*

Wankel, S.D., Joye, S.B., Samarkin, V.A., **Shah, S.R.,** Friederich, G., Melas-Kyriazi, J. and P.R. Girguis. (2010) New constraints on diffusive methane fluxes and rates of anaerobic methane oxidation in a Gulf of Mexico brine pool via deep sea *in situ* mass spectrometry. *Deep Sea Research* **57**, 2022-2029. doi: 10.1016/j.dsr2.2010.05.009.

Liu, Z., Pagani, M., Zinniker, D., DeConto R., Huber, M., Brinkhuis H., **Shah, S.R.**, Lecki R.M. and A. Pearson. (2009) Global cooling during the Eocene-Oligocene Climate Transition. *Science* **323**, 1187-1190*.* doi: 10.1126/science.1166368

Schouten, S., Hopmans, E.C., van der Meer, J., Mets, A., Bard, E., Bianchi, T.S., Diefendorf A., Escala M., Freeman, K.H., Furukawa, Y., Huguet C., Ingalls A., Menot-Combes G., Nederbragt, A.J., Oba, M., Pearson, A., Pearson, E.J., Rosell-Mele, A., Schaeffer, P., **Shah, S.R.**, Shanahan, T.M., Smith, R.W., Smittenberg, R., Talbot, H.M., Uchida, M., Van Mooy, B.A.S., Yamamoto, M., Zhang Z.H. and Sinninghe Damsté, J.S. (2009) An interlaboratory study of TEX_{86} and BIT analysis using high-performance liquid chromatography–mass spectrometry, *Geochem. Geophys. Geosyst.*, **10**, Q03012, doi:10.1029/2008GC002221.

Shah, S.R., Mollenhauer G., Ohkouchi N., Eglinton, T.I. and A. Pearson. (2008) Origins of archaeal tetraether lipids in sediments: Insights from radiocarbon analysis. *Geochimica et Cosmochimica Acta* **72**, 4577-4594. doi:10.1016/j.gca.2008.06.021

Shah, S.R. and A. Pearson. (2007) Ultra-microscale (5-25μg C) analysis of individual lipids by ^{14}C AMS: Assessment and correction for sample processing blanks. *Radiocarbon* **49**, 69-82.

Ingalls, A.E.*, **Shah, S.R.***, Hansman, R.L., Aluwihare, L.I., Santos, G.M., Druffel, E.R.M. and A. Pearson. (2006) Quantifying archaeal community autotrophy in the mesopelagic ocean using natural radiocarbon. *Proc. Natl. Acad. Sci.* **103**, 6442-6447. doi: 10.1073/pnas.0510157103 *co-first authors

Mecray, E.L., M.R. Buchholtz ten Brink and **S. Shah**. (2000) "Metals in the Surface Sediments of Long Island Sound." Chapter 6 In: Geo-Referenced Sea-Floor Mapping and Bottom Photography in Long Island Sound. V.F. Paskevich and L.J. Poppe, Eds., USGS Open-File Report 00-304.

SELECTED TALKS

Mar. 2012	**ExxonMobil Corporate Research Lab Seminar**, Clinton, NJ Radiocarbon signatures of archaeal metabolic diversity
Jan. 2012	**Bigelow Laboratory for Ocean Sciences Seminar**, Boothbay Harbor, ME Functional Diversity of Marine Archaea: Insights from Radiocarbon Studies
Sept. 2011	**International Workshop on Small-scale Radiocarbon Analysis**, ETH Zurich Compound-specific sample preparation by elemental analyzer and small-volume graphitization reactors
Apr. 2011	**Geology and Geophysics Department Meeting**, WHOI Radiocarbon analysis of archaeal membrane lipids: Towards a better understanding of how tetraether-based paleo-proxies work
Jan. 2010	**MARUM Symposium on the Ocean in the Earth System**, Universitat Bremen Radiocarbon-based insights into the biogeochemistry of marine Archaea
Jan. 2009	**Department of Marine Sciences Seminar**, U. of North Carolina at Chapel Hill Interpreting Archaeal Lipids in Sediments
Oct. 2008	**Dissertations in Chemical Oceanography Symposium**, Honolulu, HI Exploring the Source of Sedimentary Archaeal Lipids: Insights from Compound-Specific Radiocarbon Analysis
Oct. 2008	**Biology Lunch Bunch Seminar**, U. of North Carolina at Chapel Hill Exploring the Source of Sedimentary Archaeal Lipids by Comparative Radiocarbon Analysis of Alkenones and GDGTs
Jul. 2008	**Naval Research Laboratory Seminar**, Washington D.C. Exploring the Source of Sedimentary Archaeal Lipids by Comparative Radiocarbon Analysis of Alkenones and GDGTs
Dec. 2007	**American Geophysical Union Fall Meeting**, San Francisco, CA Exploring the Source of Sedimentary Archaeal Lipids by Comparative Radiocarbon Analysis of Alkenones and GDGTs
Oct. 2007	**Marine Chemistry and Geochemistry Seminar**, WHOI Origins of Archaeal Tetraether Lipids in Sediments: Insights from Comparative Radiocarbon Analysis

MENTORING AND OUTREACH

2009 – present	Graduate Student - Mara Dougherty Radiocarbon analysis of FAMEs from Arctic Seep Sediments University of Maryland Department of Chemistry
2006	REU Undergraduate Student – Erin Knappen Roberts Wesleyan University
2005	REU Undergraduate Student – Karen Chow Arizona State University
2006 – 2008	Earth Sciences Tutor, Pforzheimer Residental House, Harvard University
2005 – 2006	Undergrad Mentor, Women's Science Mentoring Program, Harvard Univ.

PROFESSIONAL SERVICE AND AFFILIATIONS

Creator and Maintainer	Microscale Radiocarbon Analysis wiki http://www.whoi.edu/nosams/csra_wiki
Journal Peer Reviewer	*Nature, Geochimica et Cosmochimica Acta, Organic Geochemistry, JGR – Biogeosciences, Frontiers in Extreme Microbiology*
Proposal Reviewer	NSF - Sedimentary Geology and Paleobiology
Memberships	American Chemical Society, American Geophysical Union, Association for the Sciences of Limnology and Oceanography, The Oceanography Society