

SUNITA R. SHAH

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EDUCATION

- Ph.D. **Harvard University** Cambridge, MA
Department of Earth and Planetary Sciences, 2008
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 (Chemistry), 1999

KCCAMS Facility, UC Irvine

Radiocarbon in Ecology and Earth System Science Short Course, 2007

PROFESSIONAL EXPERIENCE

- 2013 – Visiting Investigator
Geology and Geophysics Department
Woods Hole Oceanographic Institution, Woods Hole, MA
- 2010 – 2013 *NOSAMS Postdoctoral Scholar & Postdoctoral Investigator*
Geology and Geophysics Department
Woods Hole Oceanographic Institution, Woods Hole, MA
Sponsors: Dr. Ann P. McNichol & Dr. Benjamin A. S. Van Mooy
- 2009-2010 *National Research Council Postdoctoral Associate*
Materials Science and Technology & Marine Geosciences
U.S. Naval Research Laboratory, Washington, D.C.
Advisors: Dr. Kenneth S. Grabowski & Dr. Richard B. Coffin
- 1999-2000 *Marine Geochemistry Technician*
Costal and Marine Science Center
U.S. Geological Survey, Woods Hole, MA
Advisors: Dr. Marilyn R. Bucholtz ten Brink & Dr. Michael H. Bothner

FUNDING AND AWARDS

- 2010-2012 NOSAMS Postdoctoral Scholar Fellowship, WHOI (\$90,000)
- 2010 MARUM Fellowship, Center for Marine Environmental Sciences, Bremen – declined
- 2009-2010 National Research Council RAP Postdoctoral Award, NRL Directors Fund (\$147,000)
- 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 U.

MANUSCRIPTS UNDER REVIEW

12. Schouten, S., Hopmans, E.C., Rosell-Melé, A., Pearson, A., . . . **Shah, S.R.**, *et al.* An interlaboratory study of TEX₈₆ and BIT analysis of sediments, extracts and standard mixtures. *in review at G-Cubed*.

PEER-REVIEWED PUBLICATIONS

11. Ussler, W., Preston, C., Tavormina, P., Pargett, D., Jensen, S., Roman, B., Marin, R., **Shah, S.R.**, Girguis, P.R., Birch, J.M., Orphan, V., Scholin, C. (2013) Autonomous Application of Quantitative PCR in the Deep Sea: In Situ Surveys of Aerobic Methanotrophs Using the Deep-sea Environmental Processor. *Environmental Science and Technology*, Articles ASAP. doi: 10.1021/es4023199
10. **Shah, S.R.**, Griffith, D.R., McNichol, A.P., Galy V., Eglinton, T.I. (2013) Prominent bacterial heterotrophy and sources of ¹³C-depleted fatty acids to the interior Canada Basin. *Biogeosciences*, 10, 7065–7080. doi: 10.5194/bg-10-7065-2013.
9. Close, H.G., **Shah, S.R.**, Ingalls, A.E., Diefendorf, A.F., Brodie, E.L., Hansman, R.L., Freeman, K.H., Aluwihare, L.I., Pearson, A. (2013) Export of submicron particulate organic matter to mesopelagic depth in an oligotrophic gyre. *Proceedings of the National Academy of Sciences, early edition*. doi: 10.1073/pnas.1217514110.
8. **Shah, S.R.**, Joye, S.B., Brandes, J.A., McNichol, A.P. (2013) Carbon isotopic evidence for microbial control of carbon supply to Orca Basin, Gulf of Mexico at the seawater-brine interface. *Biogeosciences*, 10, 3175-3183. doi: 10.5194/bg-10-3175-2013.

7. Wankel, S.D., Joye, S.B., Samarkin, V.A., **Shah, S.R.**, Friederich, G., Melas-Kyriazi, J., Girguis, P.R. (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 I* **57**, 2022-2029. doi: 10.1016/j.dsr2.2010.05.009.
6. Liu, Z., Pagani, M., Zinniker, D., DeConto R., Huber, M., Brinkhuis H., **Shah, S.R.**, Leckie R.M., Pearson, A. (2009) Global cooling during the Eocene-Oligocene Climate Transition. *Science* **323**, 1187-1190. doi: 10.1126/science.1166368
5. 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., Hugué 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 TEX₈₆ and BIT analysis using high-performance liquid chromatography–mass spectrometry, *Geochemistry Geophysics Geosystems*, **10**, Q03012, doi:10.1029/2008GC002221.
4. **Shah, S.R.**, Mollenhauer G., Ohkouchi N., Eglinton, T.I., Pearson, A. (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.
3. **Shah, S.R.** and A. Pearson. (2007) Ultra-microscale (5-25µg C) analysis of individual lipids by ¹⁴C AMS: Assessment and correction for sample processing blanks. *Radiocarbon* **49**, 69-82.
2. 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. *Proceedings of the National Academy of Sciences* **103**, 6442-6447. doi: 10.1073/pnas.0510157103. *co-first authors
1. Mecray, E.L., M.R. Buchholtz ten Brink, **Shah, S.** (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.

INVITED TALKS

- Oct. 2013 **NOSAMS National Advisory and Planning Board (NAPB) Meeting**, WHOI
Exploring the Sources and Variability of Particulate Organic Carbon in a Deep Arctic basin,
and
Ultra-small Graphitization Reactors at NOSAMS
- Oct. 2013 **Marine Sciences Seminar Series**, University of Georgia
“Isotopic Insights into Organic Carbon Cycling and Microbial Metabolism in a deep Arctic basin
- May 2013 **College of Earth, Ocean, and Environment Invitational Seminar Series**, University of Delaware
Isotopic indications of organic carbon sources and bacterial metabolism in the Canada Basin
- Feb. 2013 **Large Lakes Observatory**, University of Minnesota Duluth
Isotopic Indications of Microbial Metabolic Functions from Canada Basin to Santa Monica Basin
- Sept. 2012 **NOSAMS National Advisory and Planning Board (NAPB) Meeting**, WHOI
Microbial control of carbon supply to Orca Basin, Gulf of Mexico
- 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
- 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**, University 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

Oct. 2007 **Marine Chemistry and Geochemistry Seminar, WHOI**
Origins of Archaeal Tetraether Lipids in Sediments: Insights from
Comparative Radiocarbon Analysis

CONFERENCE AND WORKSHOP PRESENTATIONS (FIRST-AUTHOR ONLY)

- Dec. 2012 **Shah, S.R.**, Joye, S.B., Brandes, J.A., McNichol, A.P. Carbon isotopic evidence for microbial control of carbon supply to Orca Basin at the brine-seawater interface. *AGU Fall Meeting, poster.*
- Aug. 2012 **Shah, S.R.**, Griffith, D.R., Galy, V., McNichol, A.P., Van Mooy, B.A.S., Eglinton, T.I. Isotopic Indications of Microbial Metabolic Activities in the Arctic Ocean. Gordon Conference Organic Geochemistry, *poster.*
- Feb. 2012 **Shah, S.R.**, Pendorf, K.J., Van Mooy, B.A.S. Towards Stable Carbon Isotopic Compositions of Intact Polar Lipids in the Sargasso Sea. *ASLO Ocean Sciences, poster.*
- Sept. 2011 **Shah, S.R.**, McNichol, A.P., Gagnon, A.R, M.C. Lardie Gaylord, D. Gerlach, W.J. Jenkins. Compound-specific sample preparation by elemental analyzer, on-line combustion of volatile compounds and small-volume graphitization reactors. *International Workshop on Small-scale Radiocarbon Analysis, ETH Zurich, talk.*
- Aug. 2008 **Shah, S.R.**, Pearson A., Mollenhauer G., Eglinton T.I. Origins of Archaeal Tetraether Lipids in Sediments: Insights from Comparative Radiocarbon Analysis. *Gordon Conference for Organic Geochemistry, poster.*
- Dec. 2007 **Shah, S.R.**, Pearson A., Mollenhauer G., Eglinton T.I. Exploring the Source of Sedimentary Archaeal Lipids by Comparative Radiocarbon Analysis of Alkenones and GDGTs. *AGU Fall meeting, talk.*
- Dec. 2006 Ingalls, A.E., **Shah, S.R.**, Hansman, R.L., Aluwihare, L.I., Santos, G.M., Druffel, E., Pearson, A. Quantifying Archaeal Community Autotrophy in the Mesopelagic Ocean Using Natural Radiocarbon. *AGU Fall meeting, poster.*
- Aug. 2003 **Shah, S.R.**, Fisher, M., Pearson, A.E., Carbon Isotope Dynamics in a Permanently Stratified Freshwater Lake. *Gordon Conference for Chemical Oceanography, poster.*

TEACHING EXPERIENCE

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

MENTORING AND OUTREACH

2009 –2012	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 Residential House Harvard University
2005 – 2006	Undergrad Mentor, Women’s Science Mentoring Program Harvard University

PROFESSIONAL SERVICE AND AFFILIATIONS

Elected Member	WHOI Womens Committee 2012-2013
Reviewer (alphabetical)	<i>Biogeochemistry Journal, Deep Sea Research I & II, Environmental Science & Technology, Frontiers in Extreme Microbiology, Geochimica et Cosmochimica Acta, JGR – Biogeosciences, Marine Chemistry, Nature, NSF - Sedimentary Geology and Paleobiology, Organic Geochemistry, Rapid Communications in Mass Spectrometry</i>
Memberships	American Chemical Society, American Geophysical Union, Association for the Sciences of Limnology and Oceanography, The Oceanography Society