

Dr. Lori A. Ziolkowski

CURRICULUM VITAE

PERSONAL INFORMATION

University of South Carolina	Office: (803) 777-0035
Marine Science Program	Lab: (803) 777-2689
Department of Earth and Ocean Sciences	Fax: (803) 777-6610
701 Sumter St., EWS 617	Email: loriz@sc.edu
Columbia, SC 29208	Web: http://www.geol.sc.edu/zlab

EDUCATIONAL BACKGROUND

2009	Ph.D.	University of California Irvine , Department of Earth System Science Thesis title: Radiocarbon of black carbon in marine dissolved organic matter
2000	M.Sc.	Dalhousie University , Department of Oceanography Thesis title: Marine photochemical production of carbon monoxide
1998	B.Sc.	University of Waterloo , Department of Chemistry

RESEARCH INTERESTS

Global carbon cycle; Quaternary perturbations of the Arctic carbon cycle; microbial degradation of thawing permafrost carbon; origin and fate of aromatic carbon in global carbon cycle; novel applications of radiocarbon and stable carbon isotopic measurements of organic molecules (biomarkers); climate mitigation via geo-engineering, carbon capture and storage.

PROFESSIONAL EXPERIENCE

7/2013 - present	Assistant Professor , University of South Carolina Joint appt: Dept of Earth and Ocean Sciences & Marine Sciences Program
10/2009 – 6/2013	Post-doctoral Fellow , McMaster University Origins Institute and School of Geography and Earth Sciences
2004 – 2009	Graduate Research Assistant , University of California Irvine Department of Earth System Science
2000 – 2004	Research Technician , Dalhousie University Department of Oceanography
1998 – 2000	Graduate Research Assistant , Dalhousie University Department of Oceanography
01/1997 – 08/1997	Guest Student Investigator , Woods Hole Oceanographic Institution Marine Chemistry and Geochemistry

Graduate Advisors:

M.Sc: Dr. William L. Miller, Dalhousie University, *now at* University of Georgia Athens

Ph.D.: Dr. Ellen R.M. Druffel, University of California Irvine

Postdoctoral Advisor: Dr. Gregory F. Slater, McMaster University

PUBLICATIONS (Peer reviewed)

Sum of times cited: 221. Average citations per item: 11.63. Citation data 8/22/2014

<http://www.researcherid.com/rid/C-6752-2012>

Google Scholar: 318 citations, h-index 12, data accessed: 8/26/2014

19. Coppola, A.I., **L.A. Ziolkowski**, C. Masiello and E.R.M. Druffel, **2014**, Aged black carbon in

- marine sediments and sinking particles, *Geophysical Research Letters*, 41, 7, 2427-2433.
18. **Ziolkowski, L.A.**, J. Wierzbos, A.F. Davila and G.F. Slater. Radiocarbon evidence of active endolithic microbial communities in the hyper-arid core of the Atacama Desert. *Astrobiology*, 13(7), 607-616, **2013**.
 17. Coppola, A.I., **L.A. Ziolkowski** and E.R.M. Druffel, Extraneous carbon corrections for radiocarbon measurements of black carbon in sediments using the benzene polycarboxylic acid method. *Radiocarbon*. 55 (2-3), 1631-1640, **2013**.
 16. **Ziolkowski, L.A.**, N. Myktyczuk, C.R. Omelon, L. Whyte and G.F. Slater, Isotopic and geochemical evidence of microbial activity of Arctic gypsum endoliths. *Biogeosciences* 10, 7661-7675, **2013**.
 15. Mailloux, B. J., A. Dochenetz, M.E. Bishop, H. Dong, **L.A. Ziolkowski**, K.E. Wommack, E. G. Sakowski, T.C. Onstott and G.F. Slater. A Carbon Free Filter for Collection of Large Volume Samples of Cellular Biomass from Oligotrophic Waters. **2012**, *Journal of Microbiological Methods*. 90(3) pg 145-151. doi:10.1016/j.mimet.2012.04.016
 14. Druffel, K.C., D. Vetter, S.M. Griffin, E.R.M. Druffel, R.B. Dunbar, D.A. Mucciarone, **L.A. Ziolkowski** and J. Sanchez-Cabez, Radiocarbon and stable isotopes in Palmyra corals during the past century, **2012**, *Geochimica et Cosmochimica Acta*, pg 154-162, 10.1016/j.gca.2010.11.028.
 13. **Ziolkowski, L.A.**, J. Greaves, A.R. Chamberlin, E.R.M. Druffel. Quantification of black carbon in marine systems using the polycarboxylic acid method: a mechanistic and yield study. **2011**, *Limnology and Oceanography Methods*, 9, pg 140-149.
 12. Harvey, M.J., C.S. Law, M.J. Smith, J.A. Hall, E.R. Abraham, C.L. Stevens. M.G. Hadfield, D.T. Ho, B. Ward, S.D. Archer, J.M. Caine, K.I. Currie, D. Devries, M.J. Ellwood, P. Hill, G.B. Jones, D. Katz, J. Kuparinen, B. Muscaskill, W. Main, A. Marriner, J. McGregor, C. McNeil, P.J. Minnett, S.D. Nodder, J. Peloquin, S. Pickmere, M.H. Pinkerton, K.A. Safi, R. Thompson, M. Walkington, S.W. Wright and **L.A. Ziolkowski**, **2011**, The SOLAS air-sea gas exchange experiment (SAGE) 2004, *Deep Sea Research II*, 58(6), pg 753-763.
 11. **Ziolkowski, L.A.** and E.R.M. Druffel, **2010**. Aged black carbon identified in marine dissolved organic matter, *Geophysical Research Letters*, 37, L16601.
 10. Santos, G.M., J. R. Southon, N. J. Drenzek, **L. A. Ziolkowski**, E. R.M. Druffel, X. Xu, D. Zhang, S.E. Trumbore, T.I. Eglinton and K.A. Huguen, **2010**. Blank assessment for ultra-small samples: chemical extraction and separation vs. AMS, *Radiocarbon*, 52(3), 1322-1335.
 9. Druffel, E.R.M., D. Zhang, X. Xu, **L.A. Ziolkowski**, J.R. Southon, G.M. Santos, S.E. Trumbore, **2010**. Compound specific radiocarbon analyses of phospholipid fatty acids, alkanes and black carbon in oceanic sediments, *Radiocarbon*, 52(3) 1215-1223.
 8. **Ziolkowski, L.A.** and E.R.M. Druffel, **2009**. Quantification of extraneous carbon during the radiocarbon analysis of black carbon, *Analytical Chemistry*, 81(24), 10156-10161, doi:10.1021/ac901922s.
 7. **Ziolkowski, L.A.** and E.R.M. Druffel, **2009**. Feasibility of isolating and detecting fullerenes and carbon nanotubes using the benzene polycarboxylic acid method, *Marine Pollution Bulletin*, 59, 126-131, doi:10.1016/j.marpolbul.2009.04.018.
 6. **Ziolkowski, L. A.** and W. L. Miller, **2007**. Variability of the apparent quantum efficiency of CO photoproduction in the Gulf of Maine and Northwest Atlantic Ocean. *Marine Chemistry* doi:10.1016/j.marchem.2007.02.004.
 5. Bouillon, R.C., W.L. Miller, M. Levasseur, M. Scarratt, A. Michaud, and **L. Ziolkowski**, **2006**. The effects of mesoscale iron enrichment on the marine photochemistry of dimethylsulfide in the NE subarctic Pacific, *Deep-Sea Research Part II – Topical studies in Oceanography*, 53(20-22): 2384-2397, doi:10.1016/j.dsr2.2006.05.024.
 4. Clark, C.D., W.T. Hiscock, F.J. Millero, G. Hitchcock, L. Brand, W.L. Miller, **L. Ziolkowski**, R.F. Chen and R.G. Zika, **2004**. CDOM distribution and CO₂ production on the southwest

- Florida shelf, *Marine Chemistry* 89(1-4): 145-167.
3. Xie, H., S.S. Andrews, W.R. Martin, J. Miller, **L. Ziolkowski**, C.D. Taylor, and O.C. Zafiriou, **2002**. Validated methods for sampling and headspace analysis of carbon monoxide in seawater, *Marine Chemistry* 77(2-3), 93-108.
 2. **Ziolkowski, L.**, K. Vinodgopal, and P.V. Kamat, 1997. Photostabilization of organic dyes on poly(styrenesulfonate)-capped TiO₂ nanoparticles, *Langmuir*, 13(12): 3214-3128.
 1. Bourbonniere, R.A., S.L. Telford, **L.A. Ziolkowski**, J. Lee, M.S. Evans and P.A. Meyers, **1997**. Biogeochemical marker profiles in cores of dated sediments from larger North American lakes, *Molecular Markers in Environmental Geochemistry*, ACS Symposium Series, 671, 133-150.

GRANTS

NSF EAR Early Career: Instrumentation and Technician Support for the Isotopic Analysis of Individual Organic Compounds in the Earth System, Susan Lang (PI), Ronald Benner (co-I) and Lori Ziolkowski (co-I), \$99,934, 05/01/2014 – 04/30/2015

NSF OPP Bioavailability of Arctic Soil Carbon: Examining the Relationship Between Chemical Composition and Lability During the Holocene, Lori Ziolkowski (sole PI), \$331,872, 08/01/2014-07/31/2017

FELLOWSHIPS

- 2011 NSERC Postdoctoral Fellowship: The impact of climate change on the carbon cycle. Quantifying the potential carbon release from thawing permafrost in the Canadian high Arctic
2 years, \$80,000
- 2009 Canadian Astrobiology Training Program & Origins Institute Postdoctoral Fellowship
2 years, \$80,000
- 2008 UC Irvine School of Physical Sciences Faculty Endowed Fellowship
- 2006 Pedagogical Fellowship, University of California Irvine, 3 years
- 2004 Jenkins Graduate Fellowship, University of California Irvine, 2 years

TEACHING EXPERIENCE

University of South Carolina

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| Fall 2014 | Instructor | Oceans and Society, Marine Science 210, 306 students
University of South Carolina |
| Fall 2013 | Instructor | Oceans and Society, Marine Science 210 Honors, 23 students
University of South Carolina |

Other institutions

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|------------|--------------------|--|
| Sept 2012 | Instructor | Astrobiology module Planetary Short Course
University of Western Ontario |
| 2007-2009 | Instructor | Radiocarbon in Ecology and Earth System Science
University of California Irvine, Short Course |
| 2006-2008 | Instructor | Teaching Assistant Professional Development Program
University of California Irvine |
| 2005, 2007 | Teaching Assistant | Introduction to Earth System Science, ESS 25
University of California Irvine |
| 2006 | Teaching Assistant | Organic Biogeochemistry, ESS 53
University of California Irvine |

SELECTED INVITED TALKS

- 2014 School of Chemistry, University of Bristol, United Kingdom
2014 Nerd Nite Honolulu
2013 Large Lakes Observatory, University of Minnesota Duluth
2013 Department of Civil and Environmental Engineering & Earth Sciences, Notre Dame
2013 Marine Science Program, University of South Carolina
2013 Marine Sciences, University of Georgia Athens
2012 Department of Earth Sciences, Carleton University
2012 Department Earth and Atmospheric Sciences, University of Alberta
2012 Department of Earth and Environmental Sciences, University of Waterloo
2012 Department of Geologic Sciences, University of Cincinnati
2011 Bigelow Institute for Ocean Sciences
2011 Origins Institute, McMaster University
2011 Department of Earth Sciences, McGill University

CONTRIBUTED ABSTRACTS (only first author contributions are listed)

Ziolkowski, L.A., What's causing "dark snow"? Let's collaborate and find out! International Glaciology Society British Branch Meeting (IGSBBM), September 2014.

Ziolkowski, L.A., G.F. Slater, T.C. Onstott, L.G. Whyte and A. Townsend-Small, Bioavailability and Chemistry of Arctic Soil Carbon, Goldschmidt Meeting, Sacramento, June 2014.

Ziolkowski, L.A., G.F. Slater, T.C. Onstott, L.G. Whyte and A. Townsend-Small, Microbes residing in young organic rich Alaskan soils contain older carbon than those residing in old mineral high Arctic soils, AGU Fall Meeting, San Francisco, Dec 2013. Poster.

Ziolkowski, L.A., B.T. Stackhouse, L.G. Whyte, T.C. Onstott and G.F. Slater, Using radiocarbon to examine microbial carbon cycling in permafrost. AGU Fall Meeting, San Francisco, CA, Dec 2012. Talk.

Ziolkowski, L.A. and G.F. Slater, Contemporary microbes in hypersaline springs that contain fossil carbon, *AGU Fall Meeting*, San Francisco, CA. Dec 2011. Talk

Ziolkowski, L.A., G.F. Slater and E.R.M. Druffel, Quantifying extraneous carbon added during GC preparation of CSRA samples, ¹⁴C small sample workshop, ETH Zurich, Switzerland, Sept 2011. Talk

Ziolkowski, L.A., G.F. Slater, A. F. Davila and J. Wierzchos, Constraining carbon sources and cycling in endolithic microbial communities in the Atacama Desert, *AGU Fall Meeting*, San Francisco, CA. Dec 2010. Talk

Ziolkowski, L.A. and E.R.M. Druffel, Black carbon in marine dissolved organic matter, *Ocean Sciences*, Portland, OR. Feb 2010. Poster

Ziolkowski, L.A., Black magic: can we make carbon disappear? UC Irvine, Half-Baked Seminar. Feb 2009. Talk

Ziolkowski, L.A. and E.R.M. Druffel, Radiocarbon values of black carbon using the Benzene

Polycarboxylic Acid Method, *AGU Fall Meeting*, San Francisco, CA. Dec 2008. Poster

Ziolkowski, L.A. and E.R.M. Druffel, Radiocarbon Content of Soot and Charred Black Carbon using the Benzene Polycarboxylic Acid Method, *AGU Ocean Sciences*, Orlando, FL. Mar 2008. Poster

Ziolkowski L.A. and C. Gardiner, The Professional Utility of Teaching Assistant Training beyond the Classroom, *Lilly West*, Pomona, CA. Mar 2008. Talk

Ziolkowski, L.A. and E.R.M. Druffel. Black carbon measurements using a revised BPCA method. *EGU*, Vienna, Austria. Apr 2007. Talk

Ziolkowski, L.A., E.R.M. Druffel and S. Griffin, Progress Towards an Estimate of the Radiocarbon Content of Black Carbon in Marine Organic Matter, *AGU Ocean Sciences*, Hawaii. Feb 2006. Poster

Ziolkowski, L.A., C.S. Law and W.L. Miller, Investigation of the Marine Photochemical Production of Carbon Monoxide in the Waters South-East of New Zealand, *IGAC Conference*, Christchurch, N.Z. Sept 2004. Poster

Ziolkowski, L.A. and W.L. Miller, U.V. Optical Properties During the Evolution of a Phytoplankton Bloom (SERIES), *ASLO/TOS Ocean Sciences*, Hawaii. Feb 2004. Talk

Ziolkowski, L. A. and W.L. Miller, Spatial and Temporal Variation of CDOM Fading Efficiency, *AGU Ocean Sciences*, Hawaii. Feb 2002. Poster

Ziolkowski, L. A., W.L. Miller, H. Xie and O.C. Zafiriou, Efficiency Spectra for the Marine Photochemical Production of Carbon Monoxide Determined Using a Solar Simulator, *ASLO*, New Mexico. Feb 2001. Talk

PERSONNEL SUPERVISED

Hongyu Li	Postdoctoral researcher	09/2014 – present
Joel Bostic	M.S. Candidate	09/2014 – present
Alexandra Holland	Undergraduate student, Marine Science, USC	08/2014 – present
Jamie Clark	Undergraduate student, Marine Science, USC	01/2014 – present
Karlee Liddy	Undergraduate student, Marine Science, USC	01/2014 – present
Drake McCrimmon	REU student, Chemistry, LSU	Summer 2014
Jane Gracie Van Adzin	REU student, Earth System Science, Cornell University	Summer 2014

OTHER ACADEMIC HONOURS AND AWARDS

2010	Invited participant, DISCO XXII (October 2010)
2009	Isocompound Meeting, Young Investigator Award
2009	UC Irvine Earth System Science Outstanding Contributions to the Department
2008	Outstanding Presentation Award, Institute of Geophysics and Planetary Physics UCI

SYNERGISTIC ACTIVITIES

Reviewing efforts

<i>Grants:</i>	ACS Petroleum Research Fund	NSF Environmental Chemistry
	National Geographic Society	NSF Ocean Technology and Interdisciplinary Coordination
	NSF Arctic Science Division	
	NSF Chemical Oceanography	

<i>Journals:</i>	Aquatic Microbial Ecology	Journal of Chromatography A
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Biogeosciences	Limnology and Oceanography
Deep Sea Research	Marine Chemistry
Environmental Research Letters	PNAS
Environmental Science & Technology	Radiocarbon
Geochimica et Cosmochimica Acta	Rapid Comm. in Mass Spectrometry
Global Biogeochemical Cycles	Science of the Total Environment
Industrial & Eng. Chem. Research	
Journal of Chromatography A	

Other: AGU Geophysical Monograph Series
Climate Literacy and Energy Awareness Network (<http://cleanet.org>)

University of South Carolina:

2014-2016 Faculty Senate Representative for the Department of Earth and Ocean Sciences
2013-2014 Graduate Student Admissions Committee, Marine Science Program

Broader Community:

2014 Session co-chair: Climate and Biogeochemistry of Cryosphere Environments, Goldschmidt, Sacramento, CA
2014 Meeting mentor in the Multicultural Program at the Ocean Sciences Meeting
2012 Session co-chair: Water, elements and life in early-Earth and Mars analogs, Goldschmidt, Montreal, QC
2012 U.S. GEOTRACES Arctic Implementation workshop participant
2011-2012 McMaster University Origin Institute Colloquium committee
2011 McMaster University Women in Science and Engineering (WISE) Panel member
2010 McMaster University Women in Science and Engineering (WISE) workshop leader: Negotiating your way to success
2010 Session co-chair: Radiocarbon insights into the global carbon cycle, Ocean Sciences meeting, Portland, Oregon
2007-2009 AGU Education and Human Resources Student Advisory Board Member
2007-2009 UC Irvine Earth System Science Journal Club Coordinator
2006-2008 Science Fair Judge, California State Science Fair
2005-2006 UC Irvine Earth System Science Departmental Graduate Student Representative

FIELD EXPERIENCE

Cruise (~300 days at sea):

R/V Tangaroa (March 2004) Performed photochemical measurements in Southern Ocean during an iron addition experiment

CCGS Martha Black (July 2003) Collected in-situ optical data in North Atlantic

R/V Pelican, (August 2002) Collected in-situ optical data in the Gulf of Mexico

R/V El Puma, (July 2002) Collected in-situ optical data and performed photochemical measurements at station Papa in North Pacific during an iron addition experiment

R/V Pelican (August 2001) Collected in-situ optical data in the Gulf of Mexico

R/V Pelican (April 2001) Collected in-situ optical data in the Gulf of Mexico

R/V Endeavor (March 2000) Performed photochemical measurements in the Sargasso Sea

R/V Endeavor (August 1999) Performed photochemical measurements in the Sargasso Sea

R/V Endeavor (July 1999) Performed photochemical measurements in the Gulf of Maine

R/V New Horizon (April 1997) Collected samples for trace gas analysis in the Southern California Bight

Other field experience: (~100 days in the field)

North Slope, AK (2014) sampling Arctic soils between Fairbanks and Deadhorse

Expedition Fjord, NU, Canada (2010) sampling hypersaline springs and sediments

Thompson, MB, Canada, NASA BOREAS (1993, 1994, 1995) collection of beaver pond water

AFFILIATIONS

American Geophysical Union (AGU)

Earth Science Women's Network (ESWN)

Geochemical Society