Helen K. White, Ph.D.

Assistant Professor of Chemistry
Department of Chemistry, Haverford College, 370 Lancaster Ave, Haverford, PA 19041
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Education

University of Sussex — **United Kingdom**
Master of Chemistry (1st Class Honors), June 2000

Reed College — **Portland, OR**
Visiting Student, 1998-1999

Massachusetts Institute of Technology (MIT) & — **Cambridge, MA**
Woods Hole Oceanographic Institution (WHOI) — **Woods Hole, MA**
Ph.D. in Chemical Oceanography, February 2006
Advisors: Timothy I. Eglinton & Christopher M. Reddy

Marine Biological Laboratory (MBL) — **Woods Hole, MA**
Microbial Diversity course participant, Summer 2003

Appointments

Haverford College — **Haverford, PA**
Assistant Professor of Chemistry, July 2009 - present

Harvard University — **Cambridge, MA**
Microbial Science Initiative Postdoctoral Fellow, January 2007-July 2009

Boston University — **Boston, MA**
Lecturer in the Department of Earth Sciences, 2006-2007

Woods Hole Oceanographic Institution — **Woods Hole, MA**
Guest Investigator, 2006-2007

Research Interests

Understanding sources, sinks & cycling of organic matter in the environment, including,
- The fate of fossil fuel-derived contaminants and their physical and chemical associations
- The role of microorganisms in the cycling of natural and anthropogenic compounds
- Natural abundance radiocarbon analysis of recalcitrant organic matter in the environment

Honors & Awards

Harvard University Microbial Science Initiative Postdoctoral Fellowship (2007)
Invited Participant, DISCO XIX Dissertations Symposium on Chemical Oceanography (2005)
American Chemical Society Award of Excellence (2002)
WHOI Charles Davis Hollister Fellowship (2001)
Merck Prize University of Sussex (2000)

Teaching Experience

Haverford College (2009 – Present)	**Year**
Chem 100 General Chemistry, lecture and laboratory	2009
Chem 368 Research Tutorial in Environmental Chemistry	2009, 2010, 2011
Chem 268 Research Tutorial in Environmental Chemistry	2010, 2011
Chem 302 Laboratory in Chemical Structure and Reactivity	2010
Chem 358 Environmental Chemistry	2010
Chem 112 Chemical Dynamics	2010, 2011
Chem 391 Chemistry Departmental Seminar	2010, 2011
Boston University (2006)	
ES 423/623 Marine Biogeochemistry	2006
ES 144 Oceanography	2006

Research Advisees

Haverford College (2009 – Present)	**Year**
Sarah Choyke, Casper Hu	2009-2010
Alissa Aron, Oriana Chegwidden, Elizabeth Coward, Catherine Sheline	2010-2011

Grants

National Science Foundation Collaborative Research: Acute response of benthic hardbottom communities to oil exposure in the deep Gulf of Mexico. 2010-2011, $26,718.

Research Cruises

• R/V Atlantis & D.S.V Alvin: Gulf of Mexico (12/06/10-12/14/10) – Investigating the response of benthic hard bottom communities to oil exposure in the deep Gulf of Mexico
• R/V Point Lobos: Monterey Canyon, CA, (02/28/07) - Collection of sediment microbial fuel cell
• R/V Atlantis & D.S.V Alvin: Juan de Fuca Ridge, (08/23/06-09/11/06) - Recovered & sampled microbial incubators & osmosamplers from vents
• R/V Clifford Barnes: Seattle, WA to Seattle, WA, (08/01/03-08/08/03) - Collection of sediment freeze cores and water samples
• R/V New Horizon: Redwood City, CA to San Diego, CA, (05/27/01-06/10/01) - Collection of various sediment cores and water samples

Field Experience

• Delaware River, NJ (06/10, 10/10) - Collection of sediment cores
• St. Jones River, DE (03/10) - Collection of sediment cores
• Dhaka, Bangladesh (03/20/08-03/27/08) - Deployment of environmental microbial fuel cell coupled to biogas biodigester
• Sippewissett Marsh and Cedar Swamp, MA (07/03) - Sampling of microbial mats and collection of environmental samples for microbial analyses
• Pawtuxet River, RI (02/03) - Collection of sediment cores
• West Falmouth Harbor, MA (11/04, 06/04, 11/03, 03/01) - Collection of sediment cores and nutrient porewater profiling

Publications

Published Journal Articles

1. Geselbracht, M.J., **H.K. White,** J.M. Blaine, M.J. Diaz, J.L. Hubbs, N.C.M. Adelstein, J.A. Kurzman (2010) New Solid Acids in the Triple-Layer Dion-Jacobson Layered Perovskite Family. *Materials Research Bulletin*. Published online doi:10.1016/j.materresbull.2010.12.007

2. White, H.K., C.E. Reimers, E.E. Cordes, G.F. Dilly and P.R. Girguis (2009) Quantitative population dynamics of microbial communities in plankton-fed microbial fuel cells. *The ISME Journal* **3**: 635-646.

3. White, H.K., T.I. Eglinton and C.M. Reddy (2008) Radiocarbon-based assessment of fossil fuel-derived contaminant associations in sediments. *Environmental Science & Technology* **42**: 5428-5434.

4. Nielsen, M.E., C.E. Reimers, **H.K. White,** S. Sharma and P.R. Girguis. (2008) Sustainable energy from deep ocean cold seeps. *Energy & Environmental Science* **1**: 584-593.

5. White, H.K., C.M. Reddy and T.I. Eglinton (2007) Relationships between carbon isotopic composition and mode of binding of natural organic matter in selected marine sediments. *Organic Geochemistry* **38**: 1824-1837.

6. Reimers, C.E., H.A. Stecher III, J.C. Westall, Y. Alleau, K. A. Howell, L. Soule**, H.K. White,** P.R. Girguis (2007) Substrate degradation kinetics, microbial diversity and the current efficiency of microbial fuel cells supplied with marine plankton. *Applied & Environmental Microbiology* **73**: 7029-7040.

7. White, H.K., L. Xu, A. L. Lima, T.I. Eglinton and C.M. Reddy (2005) Abundance, composition, and vertical transport of PAHs in marsh sediments. *Environmental Science and Technology* **39**: 8273-8280.

8. White, H.K., C.M. Reddy and T.I. Eglinton (2005) Isotopic constraints on the fate of petroleum residues sequestered in salt marsh sediments. Environmental Science and Technology **39**: 2545-2551.

9. Slater, G.F., **H.K. White,** T.I. Eglinton and C. M. Reddy (2005) Determination of microbial carbon sources in petroleum contaminated sediments using molecular radiocarbon analysis. Environmental Science & Technology **39**: 2552-2558.

10. Reddy, C.M., T.I. Eglinton, A.H. Hounshell, **H.K. White,** L. Xu, R.B. Gaines and G.S. Frysinger (2002) The West Falmouth oil spill after thirty years: The persistence of petroleum hydrocarbons in marsh sediments. *Environmental Science and Technology* **36**: 4754-4760.

Published Abstracts

11. Reimers, C.E., H.A. Stecher III, **H.K. White**, P.R. Girguis. Examining the efficiency and biogeochemistry of plankton-fed microbial fuel cells. *Abstracts of papers of the American Chemical Society:* 052-FUEL Part 2, AUG 2007.

12. Reddy, C.M., R.K. Nelson, L. Xu, E.E. Peacock, **H.K. White**, T.I. Eglinton, G.F. Slater, J.D. Warren, R.B.Gaines, G.S. Frysinger. The West Falmouth oil spill: A geochemical update after 35 years. *Geochmica et cosmochimica acta* **68** (11): A457-A457 Suppl. S, JUN 2004.

13. White, H.K., L. Xu, A. L. Lima, T.I. Eglinton and C.M. Reddy. Post-depositional transport and fate of PAHs 30 years after the West Falmouth oil spill. *Abstracts of papers of the American Chemical Society:* U519-U519 016-ENVR Part 1, AUG 2002.

14. Reddy C.M., T.I. Eglinton**, H.K. White**, J.M. Hayes. Tracing the fate of organic contaminants in the environment using natural radiocarbon abundance. *Abstracts of papers of the American Chemical Society* **222**: U422-U422 24-ENVR Part 1, AUG 2001.

Presentations ***Invited Lectures***

1. White, H.K. 2010. Investigating oil in the marine environment. Reed College, OR.
2. White, H.K. 2010. Isotopic Constraints on the origin and fate of natural & anthropogenic organic compounds in marine sediments. Hong Kong University, Hong Kong.
3. White, H.K. 2010. Health of the World's Oceans. McGill University, Montreal, Canada.
4. White, H.K. 2008. Investigating the long-term persistence of oil spilled in the marine environment. Haverford College, PA.
5. White, H.K. 2007. Anodic bacterial community similarity in different ocean-deployed microbial fuel cells. Harvard University, MA
6. White, H.K., P.R. Girguis. 2007. Examining the diversity of electricity generating microbes: New options for sustainability. Ramapo College, Mahwah, NJ.
7. White, H.K., T.I. Eglinton, C. M. Reddy. 2006. Isotopic constraints on the sources & associations of organic compounds in marine sediments. Boston University, Department of Earth Sciences, Boston, MA.
8. White, H.K., T.I. Eglinton, C. M. Reddy. 2006. Isotopic constraints on the provenance of individual biomarkers in salt marsh sediments. Massachusetts Institute of Technology, Chemical Oceanography Seminar Series, Cambridge, MA.
9. White, H.K., T.I. Eglinton, C. M. Reddy. 2006. Isotopic constraints on the origin and fate of natural & anthropogenic organic compounds in salt marsh sediments. Massachusetts Institute of Technology, Department of Civil and Environmental, Cambridge, MA.

Contributed Lectures

10. White, H.K., C.E. Reimers, C.E., H.A. Stecher III, P.R. Girguis. 2008. Examining the ecology of plankton-fed microbial fuel cells at different whole cell potentials. Ocean Sciences Meeting, Orlando, FL.
11. Reimers, C.E., H.A. Stecher III, **H.K. White**, P.R. Girguis. 2007. Examining the efficiency and biogeochemistry of plankton-fed microbial fuel cells. American Chemical Society Fall National Meeting, Boston, MA.
12. White, H.K., G.F. Slater, T.I. Eglinton, C. M. Reddy. 2006. Constraints on the origin and fate of natural & anthropogenic organic compounds in salt marsh sediments from 14C analysis. Ocean Sciences Meeting, Honolulu, HI.
13. White, H.K. 2006. Isotopic constraints on the sources and associations of natural and anthropogenic organic compounds in marine sediments. DISCO XIX, Waikaloa, HI.
14. White, H.K., C. M. Reddy, T.I. Eglinton. 2003. Radiocarbon as an inverse tracer of fossil fuel-derived contaminants in sediments. European Meeting in Environmental Chemistry, Plymouth, UK.

15. White, H.K., T.I. Eglinton, C. M. Reddy. 2002. Post-depositional transport and fate of PAHs thirty years after the West Falmouth oil spill. American Chemical Society Fall National Meeting, Boston, MA.

Contributed Posters

16. White, H.K., S.J. Choyke. 2010. Examining the distribution of organic contaminants in different size fractions in sediments. 6th International Conference on Marine Pollution and Ecotoxicology. Hong Kong.
17. White, H.K., C.E. Reimers, M.E. Nielsen, S. Sharma, P.R. Girguis. 2008. Assessing power production and microbial ecology of environmental marine microbial fuel cells. American Society of Microbiology Annual Meeting. Boston, MA.
18. White, H.K., C.E. Reimers, H.A. Stecher III, P.R. Girguis. 2007. Examining the ecology of plankton-fed microbial fuel cells. American Society of Microbiology Annual Meeting. Toronto, Canada.
19. White, H.K., C. M. Reddy, T.I. Eglinton. 2005. Relationships between the radiocarbon age and modes of association of natural organic matter in coastal sediments. 22nd International Meeting on Organic Geochemistry, Seville, Spain.
20. White, H.K., T.I. Eglinton, C. M. Reddy. 2004. Relationships Between the Radiocarbon Age and Modes of Association of Organic Matter in Environmental Matrices. Gordon Research Conference in Organic Geochemistry, Holderness, NH.
21. White, H.K., C. M. Reddy, T.I. Eglinton. 2004. Radiocarbon as an inverse tracer of fossil fuel-derived contaminants in sediments. American Geophysical Union Ocean Sciences Meeting, Portland, OR.
22. White, H.K., T.I. Eglinton, C. M. Reddy. 2002. Radiocarbon as an inverse tracer of petroleum residues in sediments. Gordon Research Conference in Organic Geochemistry, Holderness, NH.
23. White, H.K., T.I. Eglinton, C. M. Reddy. 2001. Radiocarbon as a tracer of petroleum resdues in Wild Harbor sediments. North Atlantic Society of Environmental Toxicology and Chemistry, Plymouth, MA.

Professional Memberships

- American Chemical Society
- American Geophysical Union
- American Society for Microbiology
- European Association of Organic Geochemists

Professional Activities

- Reviewer for Marine Chemistry, Earth & Planetary Science Letters, Environmental Chemistry Letters, Radiocarbon
- The Climate Change Education Partnership (CCEP) program proposal panelist, National Science Foundation, July 2010

Synergistic Activities

- Curriculum development for the Mentoring And Student Teaching (MAST) program for Philadelphia area high school and middle school students at Haverford College (2009-2011)
- Collaboration with Futurefarmers on the public art project *Soil Kitchen.* This project addressed issues of sustainability specific to the urban environment through an understanding of soil chemistry and food (April 2011).
- Lab instructor for high school teacher workshop, Windows to the Invisible World, Harvard University (Cambridge, MA, 2008).

Haverford College Service

- Haverford College Anthropology & Environmental Studies search committee 2009
- Environmental Studies working group 2009-2010
- Haverford College Biology & Environmental Studies search committee 2010
- Tri-College Environmental Studies working group 2010-2011