COLLEEN M. HANSEL

CONTACT INFORMATION

School of Engineering and Applied Science
Pierce Hall
29 Oxford Street, Room 118
Harvard University
Cambridge, MA 02138

Phone: (617) 495-2858
Fax: (617) 496-1471

email: hansel@seas.harvard.edu
http://seas.harvard.edu/envmicro

EDUCATION

Ph.D. Department of Geological and Environmental Sciences, Stanford University. 2004.
Thesis: *Bacterial and Geochemical Controls on the Reductive Dissolution and Secondary Mineralization of Iron (Hydr)oxides* (Advisor: Scott Fendorf)

M.S. Department of Plant, Soil, and Entomological Sciences, University of Idaho. 1999.
Thesis: Seasonal Cycling of Metal(loid)s Within Wetland Ecosystems: The Role of Aquatic Plants (Advisor: Scott Fendorf)

B.S. Department of Geology, California State University, Sacramento. 1997.

APPOINTMENTS

Assistant Professor of Environmental Microbiology School of Engineering and Applied Sciences, Harvard University	2007-present
Postdoctoral Scientist, Molecular Microbial Ecology Group Dept of Geological and Environmental Sciences, Stanford University	2004-2006
Graduate Research Assistant, Soil and Environmental Chemistry Dept of Geological and Environmental Sciences, Stanford University	2000-2004
Graduate Teaching Assistant, Soil and Environmental Chemistry Dept of Geological and Environmental Sciences, Stanford University	1999-2000
Graduate Research Assistant, Soil Chemistry Dept of Plant, Soil, and Entomological Sciences, University of Idaho	1997-1999

SYNERGISTIC ACTIVITIES

TEACHING

Instructor for new courses: ES164/264: Environmental Chemistry
ES166/266: Environmental Microbiology
ES263: Applied Microbial Geochemistry

Faculty Instructor/Advisor: SEAS Sophomore forum, 2007-present

SEAS Undergraduate Advisor, 2007-present

Undergraduate Student Sponsor through the Research Experience for Undergrads (REU) program at Harvard University

Faculty Member of the Microbial Sciences Initiative at Harvard University and the Harvard University Center for the Environment

Student Mentor for the Harvard iGEM (International Genetically Engineered Machine) 2008 team.

Undergraduate Mentor: (research)	Dana Lazarus, 6/2007-present. PRISE fellow, HCRP fellow Jane Eng, 9/2007-present. Microbial Sciences Initiative Intern Joao Campos, 2/2008-present. Funded by PI. Greta Friar, 6/2008-present. HUCE summer fellow
Graduate Students:	Christopher Lentini (G2) Adiari Vazquez-Rodriguez (G1) Lu Sun (G1)
Postdoctoral Scholars:	Eileen Ekstrom, 1/2007-present Cara Santelli, 6/2007-present Deric Learman, 8/2008-present

PROFESSIONAL ACTIVITIES

Panel Member for the National Science Foundation, Geobiology and Low-Temperature Geochemistry (GG) Program

Proposal Reviewer for NASA's Astrobiology: Exobiology and Evolutionary Biology (EXB) Program and NSF Geobiology and Low-Temperature Geochemistry (GG) Program

Facility User Reviewer for the DOE user facilities, Environmental Molecular Sciences Laboratory at Pacific Northwest National Laboratory and Stanford Synchrotron Radiation Laboratory

Journal Reviewer for Environmental Science and Technology, Applied Geochemistry, Geochimica et Cosmochimica Acta, Journal of Environmental Quality, Geobiology

Session organizer: Goldschmidt (2007), *Microbially mediated processes governing the redox cycling of metals*
American Chemical Society (2008), *Microbial, molecular and mineralogical characteristics of biological metal oxidation*

Professional Affiliations: American Geophysical Union, Mineralogical Society of America, American Society for Microbiology, Geochemical Society

AWARDS

Microbial Genome Sequencing Award, Marine Microbiology Initiative, Gordon and Betty

Moore Foundation (2005)
Environmental Protection Agency Travel Grant (2005)
Woods Hole Oceanographic Institute Postdoctoral Fellowship (2004)
Graduate Student Fellowship, Natural and Accelerated Bioremediation Program, DOE (2002)
McGee Grant in Earth Science, Stanford University (2000, 2002)
Marine Biological Laboratory Microbial Diversity Course Scholarship (2000)
Shell Foundation Award, Stanford University (2000)

PUBLICITY

Harvard Magazine (2007) Methanol, Cheeseburgers, Metals. Volume 110, Number 2

Stanford Synchrotron Radiation Laboratory Research Highlight (2003) Investigating Chromium-Contamination and Remediation. Volume 3, Number 11

BIBLIOGRAPHY

PUBLISHED JOURNAL ARTICLES

Hansel, C.M., S. Fendorf, P.M. Jardine, and C.A. Francis. 2008. Changes in bacterial and archaeal community structure and functional diversity along a geochemically variable soil profile. *Appl. Environ. Microb.* 74, 1620-1633.

Hansel, C.M. and C.A. Francis. 2006. Coupled photochemical and enzymatic Mn(II) oxidation pathways of a planktonic *Roseobacter*-like bacterium. *Appl. Environ. Microb.* 72, 3543-3549.

Hansel, C.M., S.G. Benner, S. Fendorf. 2005. Competing Fe(II)-induced mineralization pathways of ferrihydrite. *Environ. Sci. Technol.* 39, 7147-7153.

Charette, M.A., E.R. Sholkovitz, and **C.M. Hansel**. 2005. Trace element cycling in a subterranean estuary: Part 1. Geochemistry of the permeable sediments. *Geochim. Cosmochim. Acta*. 69, 2095-2109.

Hansel, C.M., S.G. Benner, P. Nico, S. Fendorf. 2004. Structural constraints of ferric (hydr)oxides on dissimilatory iron reduction and the fate of Fe(II). *Geochim. Cosmochim. Acta*, Special Issue on Microbial Geochemistry, 68, 3217-3229.

Hansel, C.M., S.G. Benner, J. Neiss, A. Dohnalkova, R.K. Kukkadapu, and S. Fendorf. 2003. Secondary mineralization pathways induced by dissimilatory iron reduction of ferrihydrite under advective flow. *Geochim. Cosmochim. Acta* 67, 2977-2992.

Hansel, C.M., B.W. Wielinga, S. Fendorf. 2003. Structural and compositional evolution of Cr/Fe solids following indirect chromate reduction by dissimilatory iron-reducing bacteria. *Geochim. Cosmochim. Acta* 67, 401-412.

Benner, S.G., **C.M. Hansel**, B.W. Wielinga, T. Barber, S. Fendorf. 2002. Reductive dissolution and biomineralization of iron hydroxide under dynamic flow conditions. *Environ. Sci. Technol*. 36, 1705-1711.

Hansel, C.M., M.J. LaForce, S. Fendorf, and S. Sutton. 2002. Spatial and temporal association of As and Fe species on aquatic plant roots. *Environ. Sci. Technol.* 36, 1988-1994.

Hansel, C.M., S.E. Fendorf, S. Sutton, and M. Newville. 2001. Characterization of Fe plaque and associated metals on the roots of mine-waste impacted aquatic plants. *Environ. Sci. Tech.* 35, 3863-3868.

Wielinga, B., M.M. Mizuba, **C.M. Hansel**, and S.E. Fendorf. 2001. Iron promoted reduction of chromate by dissimilatory iron-reducing bacteria. *Environ. Sci. Technol.* 35, 522-527.

Bostick, B.C., **C.M. Hansel**, M.J. La Force, and S. Fendorf. 2001. Seasonal fluctuations in zinc speciation within a contaminated wetland. *Environ. Sci. Technol*. 35, 3823-3829.

La Force, M.J., **C.M. Hansel**, and S.E. Fendorf. 2001. Seasonal transformations of Mn in a palustrine emergent wetland. *Soil Sci. Soc. Amer. J.* 66, 1377-1389.

La Force, M.J., **C.M. Hansel**, and S.E. Fendorf. 2000. Arsenic speciation, seasonal transformations, and co-distribution with iron in a mine waste-influenced palustrine emergent wetland. *Environ. Sci. Technol*. 34, 3937-3943.

Wielinga, B., B. Bostick, **C.M. Hansel**, R.F. Rosenzweig, and S. Fendorf. 2000. Inhibition of bacterially promoted uranium reduction: Ferric (hydr)oxides as competitive inhibitors. *Environ. Sci. Technol.* 34, 2190-2195.

Fendorf, S.E., B.W. Wielinga, and **C.M. Hansel**. 2000. Cycling of chromium in the environment: Biotic versus abiotic reduction pathways. *Int. Geol. Rev.* 42, 691-701.

BOOK CHAPTERS

Hansel, C.M., M.J. LaForce, S.E. Sutton, and S. Fendorf. 2002. Ecosystem Dynamics of Zinc and Manganese within a Mine-Waste Impacted Wetland. *In* S. Wood and R. Hellmann (Eds.) Water-Rock Interactions, Ore Deposits, and Environmental Geochemistry, A Tribute to David A. Crerar, Geochemical Society Special Publication, Geochemical Society of America. p. 441-454.

Fendorf, S., **C.M. Hansel**, and B. Wielinga. 2002. Operative Pathways of Chromate and Uranyl Reduction within Soils and Sediments. *In* P-C. Zhang and P.V. Brady (Eds.) Geochemistry of Soil Radionuclides, SSSA Special Publication Number 59, Soil Science Society of America, Madison, WI. p. 111-130.

PUBLISHED ABSTRACTS

Hansel, C.M. and S. Fendorf. 2005. The fleeting (bio)availability of ferrihydrite. Geochim. Cosmochim. Acta, Proceedings of the 2005 Goldschmidt Conference, 69, A462.

Hansel, C.M., S.G. Benner, J. Neiss, A. Dohnalkova, and S. Fendorf. 2002. Mechanisms of Fe Biomineralization Induced By Dissimilatory Iron Reduction. Abstracts of Papers of the American Chemical Society, 223, U599.

Benner, S.G., **C.M. Hansel**, K.U. Mayer, and S. Fendorf. 2002. Modeling the reactive transport and biomineralization of ferrihydrite reductive dissolution. Abstracts of Papers of the American Chemical Society, 223, U599.

Fendorf, S., **C.M. Hansel**, P.S. Nico, and S.G. Benner. 2002. Impact of surface alterations on reduction pathways of metals. Abstracts of Papers of the American Chemical Society, 223, U596.

Fendorf, S., **C.M. Hansel,** S.G. Benner, K.L. Revill, P.S. Nico, and B.C. Bostick. Biogenic evolution of microscale heterogeneity: Impact on contaminant dynamics. Geochim. Cosmochim. Acta, Proceedings of the 2002 Goldschmidt Conference, 66, A229.

Hansel, C.M., B.W. Wielinga, and S.E. Fendorf. 2000. Structural environment of microbially produced chromium precipitates. Abstracts of Papers of the American Chemical Society, 220, U347.

Wielinga, B.W., **C.M. Hansel**, and S.E. Fendorf. 2000. Influence of iron (hydr)oxides on the reductive stabilization of heavy metals and radionuclides. Abstracts of Papers of the American Chemical Society, 220, U346.

INVITED PROFESSIONAL PRESENTATIONS

Hansel , C.M. 2008. Expanding the Role of Microbes in the Oxidation of Mn(II). American Chemical Society, Philadelphia, PA.

Hansel, C.M. 2008. New Insights into Microbially Mediated Metal Redox Cycling. American Society for Microbiology, Boston, MA.

Hansel, C.M. and C. Santelli. 2008. Defining the Abiotic and Biotic Contributions to Metal Sequestration within Acidic Mine Drainage in Appalachia. Water Resources Research Center, Amherst, MA.

Hansel, C.M., S.G. Benner, and S. Fendorf. 2005. Bacterial-induced mineralization of Fe (hydr)oxides and subsequent modification of surface reactivity. Joint Assembly, New Orleans, LA.

Hansel, C.M., S.G. Benner, and S. Fendorf. 2004. Structural Constraints of Ferric (Hydr)oxides on Dissimilatory Iron Reduction. Bouyoucos Conference on Electron Transfer and Environmental Biogeochemistry at the Clay-Water Interface, Soil Science Society of America, San Antonio, TX.

Hansel, C.M., S.G. Benner, and S. Fendorf. 2003. Secondary Mineralization Pathways Induced By Dissimilatory Iron Reduction of 2-line Ferrihydrite. United States Geological Survey Seminar. Menlo Park, CA.

Hansel, C.M., S.G. Benner, J. Neiss, A. Dohnalkova, and S. Fendorf. 2002. Mechanisms of Fe Biomineralization Induced By Dissimilatory Iron Reduction. Natural and Accelerated Bioremediation (NABIR) PI Annual Meeting, Department of Energy (DOE), VA.

Hansel, C.M., S.G. Benner, P.S. Nico, and S. Fendorf. 2002. Effects of Reductive Biomineralization of Ferric Hydroxides on Sustained Microbial Metabolism and Contaminant Sequestration. American Geophysical Union Annual Meeting. AGU, San Francisco, CA.

Hansel, C.M., S.G. Benner, P.S. Nico, and S. Fenforf. 2002. Resolving Reductive Biomineralization Pathways of Ferric Hydroxides. Soil Science Society of America. SSSA, Indianapolis, IN.