

**Andrew M. Graham**  
Department of Chemistry  
Grinnell College  
1116 8<sup>th</sup> Avenue, Grinnell, IA 50112-1690  
grahaman@grinnell.edu

## **EDUCATION**

- 2010      Ph.D., Environmental Engineering  
Johns Hopkins University, Baltimore, Maryland (Advisor: Prof. Edward Bouwer)  
Dissertation: *Chromium Fate and Speciation in Anoxic Estuarine Sediments: the Role of Reduced Iron-Sulfur Minerals*
- 2007      M.S., Environmental Engineering  
Johns Hopkins University, Baltimore, Maryland
- 2003      B.A., Geology  
Earlham College, Richmond, Indiana  
College and Departmental Honors  
Thesis: *Vertical Distribution of Heavy Metals in Springwood Lake Sediments, Richmond, Indiana*

## **PROFESSIONAL EXPERIENCE**

- 2012-present: Assistant Professor of Chemistry, Grinnell College, Grinnell, IA
- 2010-2012      Postdoctoral Research Fellow, Smithsonian Environmental Research Center,  
Edgewater, MD (Supervisor: Dr. Cynthia Gilmour)
- 2005-2010      Research Assistant, Johns Hopkins University  
Department of Geography and Environmental Engineering
- 2008-2009      Teaching Assistant, Johns Hopkins University  
Department of Geography and Environmental Engineering  
*Engineering Microbiology*
- 2003-2005      Special Education Teacher  
Beaumont High School, St. Louis, Missouri  
Teach For America Corps Member

## **HONORS AND AWARDS**

- 2010      Smithsonian Institution Postdoctoral Fellowship Recipient
- 2010      American Chemical Society Division of Environmental Chemistry  
Graduate Student Award
- 2006      National Science Foundation Graduate Research Fellowship  
Recipient

2005                    Johns Hopkins University Whiting School of Engineering Abel  
Wolman Graduate Fellowship Recipient

2003                    Phi Beta Kappa, Earlham College Chapter

## PEER-REVIEWED PUBLICATIONS

**Graham, A.M.** Dissolved organic matter interactions with mercury in the Florida Everglades. In: *Mercury and the Everglades – A Synthesis and Model for Complex Ecosystem Restoration*. Axelrad, D.M., Rumbold, D., and Pollman, C., Eds. Springer. *Submitted October 2016*.

**Graham, A.M.**, Cameron-Burr, K.T.\*, Hajic, H.\*, Lee, C.\*, Msekela, D.\*, and Gilmour, C.C. Sulfurization of dissolved organic matter increases Hg-sulfide-DOM bioavailability to a Hg-methylating bacterium. *Environmental Science and Technology* DOI: 10.1021/acs.est.7b02781

Gilmour, C.C., M. Podar, A.L. Bullock, **A.M. Graham**, S.D. Brown, A.C. Somenhally, A. Johs, R.A. Hurt, Jr., K.L. Bailey, and D.A. Elias (2013). Mercury methylation by novel microorganisms from new environments. *Environmental Science and Technology* 47: 11810-11820.

**Graham, A.M.**, G.R. Aiken, and C.C. Gilmour (2013). Effect of dissolved organic matter source and character on microbial Hg methylation in Hg-S-DOM solutions. *Environmental Science and Technology*, 47: 5746-5754.

**Graham, A.M.**, A.L. Bullock, A.C. Maizel, D.A. Elias, and C.C. Gilmour (2012). Detailed assessment of the kinetics of Hg-cell association, Hg methylation, and methylmercury degradation in several *Desulfovibrio* species. *Applied and Environmental Microbiology*, 78: 7337-7346.

**Graham, A.M.**, G.R. Aiken, and C.C. Gilmour (2012). Dissolved organic matter enhances microbial mercury methylation under sulfidic conditions. *Environmental Science and Technology*, 46: 2715-2723.

**Graham, A. M.** and E. J. Bouwer (2012). Oxidative dissolution of pyrite surfaces by hexavalent chromium: surface site saturation and surface renewal. *Geochimica et Cosmochimica Acta* 83: 379-396.

**Graham, A. M.** and E. J. Bouwer (2010). Rates of Hexavalent Chromium Reduction in Anoxic Estuarine Sediments: pH Effects and the Role of Acid Volatile Sulfides. *Environmental Science and Technology*, 44: 136-142.

**Graham, A. M.**, A. R. Wadhawan, and E. J. Bouwer (2009). Chromium Occurrence and Speciation in Baltimore Harbor Sediments and Porewater, Baltimore, Maryland, USA. *Environmental Toxicology and Chemistry*, 28: 471-480.

\*Denotes Grinnell College Undergraduate Student

## PRESENTATIONS

Van Helten, S.\*, Lopez, S.\*, Smith, K.\*, Wadle, A.\*, and **Graham, A.M.** 2017. Geochemical controls on methylmercury production in shallow alluvial groundwaters in the Cedar River

floodplain. 13<sup>th</sup> International Conference on Mercury as a Global Pollutant, Providence, Rhode Islands, Poster.

Kanzler, C.\* and **Graham, A.M.** (2017). Sulfide-induced abiotic methylmercury transformation. 253<sup>rd</sup> American Chemical Society National Meeting, San Francisco, California. Poster.

Lopez, S.\* and **Graham, A.M.** (2017). Mercury cycling in an Iowa terrace fen. 253<sup>rd</sup> American Chemical Society National Meeting, San Francisco, California. Poster.

Van Helten, S.\* and **Graham, A.M.** (2017). Spatiotemporal variability in MeHg production in a restored oak savanna floodplain. 253<sup>rd</sup> American Chemical Society National Meeting, San Francisco, California. Poster.

**Graham, A.M.** (2016). Inquiry-based learning in environmental chemistry throughout a liberal-arts college chemistry curriculum. 252<sup>nd</sup> American Chemical Society National Meeting, Philadelphia, Pennsylvania.

Leverich, E.\*, Yang, X.\*, & **Graham, A. M.** (2016). Effect of Methylmercury (MeHg) Speciation on MeHg Degradation by an Anaerobic Bacterium. 251st American Chemical Society National Meeting, San Diego, California. Poster.

Msekela, D.\*, Hajic, H.\*, Lee, C.\*, Cameron-Burr, K.\*, & **Graham, A. M.** (2016). DOM Sulfidization Increases Hg Bioavailability for Microbial Methylation in Hg-sulfide-DOM Solutions. 251st American Chemical Society National Meeting, San Diego, California. Poster.

Jaffer, E.K.\* , C.C. Gilmour, **A.M. Graham**. "Effects of Fe(II) and dissolved organic matter on microbial mercury methylation in sulfidic solutions." 247<sup>th</sup> American Chemical Society National Meeting, Dallas, Texas, March 16-20, 2014. Poster.

Jaffer, E.K.\* and **A.M. Graham**. "Effect of Fe(II) on microbial MeHg production in Hg-S-DOM solutions." 2013 Physical Science, Math, and Computer Science Undergraduate Research Symposium of the Midstates Consortium for Math and Science, Chicago Illinois, October 25-26, 2013. Poster.

Cameron-Burr, K.\* and **A.M. Graham**. "Effects of dissolved organic matter character on mercury bioavailability." 2013 Physical Science, Math, and Computer Science Undergraduate Research Symposium of the Midstates Consortium for Math and Science, Chicago, Illinois, October 25-26, 2013. Poster.

Aiken, G.R., C. Gerbig, **A.M. Graham**, J. Moreau, D. Krabbenhoft, C.C. Gilmour. "The role of DOM in the methylation of mercury by sulfate-reducing bacteria." 11<sup>th</sup> International Conference on Mercury as a Global Pollutant, Edinburgh, Scotland, UK, July 28-Aug 2, 2013. Poster.

Bullock, A.L., **A.M. Graham**, A.C Maizel, M. Podar, S.D. Brown, A.C. Somenahally, A. Johs, R.A. Hurt, Jr., K. L. Bailey, D.A. Elias, and C.C. Gimour. "Mercury methylation by *Firmicutes*, Methanogens, and *Deltaproteobacteria*: Methodology for Assessing Methylation in Pure Culture." 11<sup>th</sup> International Conference on Mercury as a Global Pollutant, Edinburgh, Scotland,

UK, July 28-Aug 2, 2013. Poster.

**Graham, A.M.**, K. Cameron-Burr\*, E. Jaffer\*, A.L. Bullock, A.C. Maizel, G.R. Aiken, and C.C. Gilmour. "DOM Character Controls the Bioavailability of Hg-DOM-Sulfide Nanoparticles/Clusters to Hg-Methylating Bacteria." 11<sup>th</sup> International Conference on Mercury as a Global Pollutant, Edinburgh, Scotland, UK, July 28-Aug 2, 2013. Poster.

**Graham, A.M.** "New insights into the biogeochemistry of mercury methylation." University of Iowa Civil and Environmental Engineering Department Seminar. February 8, 2013.

**Graham, A.M.**, G.R. Aiken, and C.C. Gilmour. "Dissolved organic matter concentration and character influence Hg-S bioavailability to Hg-methylating bacteria." 22<sup>nd</sup> Annual Goldschmidt Conference, Montreal, Quebec, Canada, June 24-29, 2012.

**Graham, A.M.**, G.R. Aiken, and C.C. Gilmour. "Dissolved Organic Matter Enhances Hg Bioavailability to a Hg-Methylating Bacterium Under Mildly Sulfidic Conditions." 44<sup>th</sup> Annual Meeting of the American Geophysical Union, San Francisco, CA, December 6-10, 2012.

**Graham, A.M.** "Metal Pollution in Aquatic Environments." Special Guest Lecture to Environmental Science class at Maryland Institute College of Art. September 23, 2011.

**Graham, A.M.** and C.C. Gilmour, "Humic acid increases Hg bioavailability to a Hg-methylating bacterium under sulfidic conditions." 10<sup>th</sup> International Conference on Mercury as a Global Pollutant, Halifax, Nova Scotia, July 24-29, 2011. Poster.

**Graham, A.M.**, A.L. Bullock, C.C. Gilmour, and D.A. Elias, "Comparison of methylmercury production rates by *Desulfovibrio* species in short-term washed cell assays." 10<sup>th</sup> International Conference on Mercury as a Global Pollutant, Halifax, Nova Scotia, July 24-29, 2011. Poster.

Gilmour, C.C., Morcol, T.B., Riedel, G.S., Bell, J.T., **Graham, A.M.**, and D.A. Elias, "Small thiols enhance mercury methylation rates by sulfate-reducing bacterium *Desulfovibrio desulfuricans* ND132 by enhancing solubility." 111<sup>th</sup> General Meeting of the American Society for Microbiology, New Orleans, LA, May 20-24, 2011.

**Graham, A.M.** and E. J. Bouwer, "Kinetics of Cr(VI) Reduction by Pyrite Surfaces at pH 4 to 9: Surface Coverage and Passivation Effects." 20th Annual Goldschmidt Conference, Knoxville, TN, June 13-18, 2010.

**Graham, A.M.** and E.J. Bouwer. Chromium Fate and Speciation in Anoxic Estuarine Sediments: The Role of pH and Acid Volatile Sulfides (AVS). 238th American Chemical Society National Meeting, Washington, D.C., August 16-20, 2009.

**Graham, A.M.** and E.J. Bouwer. Rates of Cr(VI) Reduction in Baltimore Harbor Sediments, Baltimore, MD, USA. Gordon Research Conference, Environmental Sciences: Water, Holderness, NH, June 25, 2008. Poster.

Baummer, J.C., K.J. Watlington, **A.M. Graham**, E.J. Bouwer, W.L. Goodfellow, and W.L. McCulloch. Bioassay Testing of Baltimore Harbor Sediments Spiked with Cr(VI).

28th Annual Meeting, Society for Environmental Toxicology and Chemistry, Milwaukee, WI. November 13, 2007.

Watlington, K.J., **A.M. Graham**, and E.J. Bower. Bioassay Testing of Baltimore Harbor Sediments Spiked with Cr(VI). 9th International In Situ and On-Site Bioremediation Symposium, Baltimore, MD. May 10, 2007.

**Graham, A.M.** and E.J. Bower. Reduction of Hexavalent Chromium in Baltimore Harbor Sediments--Results of Sediment Spiking Studies. 9th International In Situ and On-Site Bioremediation Symposium, Baltimore, MD. May 10, 2007.

Bower, E.J., **A.M. Graham**, A.R. Wadhawan, and K.J. Watlington. Chromium Occurrence and Behavior in Baltimore Harbor Sediments. PA/Chesapeake AWWA Joint Conference, Hershey, PA. April 26, 2007.

**Graham, A.M.** and E.J. Bower. Chromium Occurrence and Cr(VI) Attenuation in Baltimore Harbor Sediments. 233rd American Chemical Society National Meeting, Chicago, Illinois. March 28, 2007.

**Graham, A.M.** and R.L. Parker. Vertical Distribution of Heavy Metals in Springwood Lake Sediments, Richmond Indiana. 2003 Geological Society of America Annual Meeting and Exposition, Seattle, Washington. November 2-5, 2003. Poster.

\*Denotes Grinnell College Undergraduate Student

## **GRANT AWARDS**

Graham, A.M. and Jacobson, P.J. *Bringing CERA to Campus: An Environmental Monitoring Array for Teaching, Learning, and Research*. Grinnell College Innovation Fund 2017-2019. \$58,368.

## **COURSES TAUGHT**

Introduction to Earth Systems Science (Fall 2012, 2013, 2014, 2015, 2017)  
Introduction to Inorganic and Analytical Chemistry Lab (Fall 2012, Spring 2015, Spring 2016)  
Introduction to Inorganic and Analytical Chemistry (Spring 2013, Fall 2013, Spring 2016)  
Environmental Chemistry (Spring 2013, 2016)  
Tutorial: Contested Waters of the American Southwest (Fall 2014)  
Aquatic Geochemistry (Spring 2015)  
Senior Seminar: The Food Energy Water Nexus

## **PROFESSIONAL ASSOCIATIONS**

American Chemical Society  
Geological Society of America  
National Association of Geoscience Teachers  
Midwest Association of Chemistry Teachers in Liberal Arts Colleges

## **JOURNAL REFEREE (last ~1 year)**

Environmental Science and Technology

Environmental Science and Technology Letters  
Geochimica et Cosmochimica Acta  
Science of the Total Environment  
Journal of Hazardous Materials  
Environmental Engineering Science

## **PROFESSIONAL DEVELOPMENT**

Midstates Consortium for Math and Science New Faculty Workshop: Strategic Planning for Early-Career Success, July 2012

The Inclusive Classroom: Practical Strategies for Diverse Classrooms. Workshop at Grinnell College, Aug 6-10, 2012.

## **SERVICE AND OUTREACH**

2015	Chemistry Summer Research Director
2013-2015	Faculty Laboratory Mentor, Grinnell Science Project
2014-2016	Center for Prairie Studies Advisory Board, Grinnell College
2014-present	Conard Environmental Research Area (CERA) Advisory Board, Grinnell College
2015-2016	Convocation Committee, Grinnell College
2013-2016	Teacher Education Committee, Grinnell College