Heileen Hsu-Kim, Ph.D.

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Education

University of California, Berkeley	Environmental Engineering	Ph.D. 2004
University of California, Berkeley	Environmental Engineering	M.S. 1999
Massachusetts Institute of Technology	Environmental Engineering Science	B.S. 1998

Professional Experience

Duke University, Civil & Environmental Engineering. *Associate Professor*	2013-present
Assistant Professor	2005-2013
Nicholas School of the Environment, *Secondary Faculty Appointment*	2011-present
University of Delaware, College of Marine Studies. *Postdoctoral Fellow*	2004-2005
University of California, Berkeley. *Graduate Student Instructor*	Fall 1999
Lawrence Livermore National Laboratory. *Summer Research Intern*	1998, 1999

Synergistic Activities

Hsu-Kim is an environmental engineer with expertise in aquatic geochemistry and nanogeoscience. Her research primarily focuses on trace elements and the role of geochemical speciation for bioavailability in the environment. Current research projects include topics related to mercury biogeochemistry, trace element toxins associated with coal combustion products, and environmental applications and implications of nanotechnology. She has published more than 30 peer-reviewed journal papers, including several influential papers on environmental nanogeochemistry and mercury biogeochemistry. Hsu-Kim is also the faculty advisor for the student group FEMMES (Females Exceling More in Math, Engineering and Science), a K-12 STEM education outreach group for the Durham, North Carolina community.

Teaching

CEE561L/ENV542L Environmental Aquatic Chemistry (graduate level), fall semesters
CEE461L Chemical Processes in Environmental Engineering (undergraduate), fall semesters
CEE/ENV666 Aquatic Geochemistry, (graduate), spring semesters

Honors and Awards

Bass Professorship for excellence in research and teaching, Duke University, 2014-2019
American Society for Engineering Education, 20 Under 40, Prism Magazine, Sept. 2014
Environmental Science & Technology Excellence in Review Award, 2013
Presidential Early Career Award for Scientists and Engineers, 2012
Department of Energy Early Career Research Award, 2011
NSF Ridge 2000 Postdoctoral Fellowship, "Metal sulfide speciation and cluster formation at deep-sea hydrothermal vents", 2004
ACS Environmental Chemistry Division Graduate Student Paper Award, 2003
UC-Berkeley Outstanding Graduate Student Instructor Award, 1999-2000
National Physical Science Consortium Graduate Student Fellowship, 1998-2004

Peer-Reviewed Journal Publications

1. Jiang, C. and Hsu-Kim, H. (2014). Direct *in situ* measurement of dissolved zinc in the presence of zinc oxide nanoparticles using anodic stripping voltammetry. *Environ. Sci.: Processes & Impacts.* 16(11), 2536-2544. DOI: 10.1039/c4em00278d.
2. Zhang, T.; Kucharzyk, K.H.; Kim, B.; Deshusses, M.A.; Hsu-Kim, H. (2014). Net methylation of mercury in estuarine sediment microcosms amended with dissolved, nanoparticulate, and microparticulate mercuric sulfides. *Environ. Sci. & Technol*. 16, 9133-9141. DOI: 10.1021/es500336j.
3. Hagan, N.; Robins, N.; Espinoza Gonzales, R.D.; Hsu-Kim, H. (2014). Mercury speciation and bioaccessibility from adobe bricks and dirt floors in Huancavelica, Peru. *Environmental Geochemistry and Health.* In press. DOI: 10.1007/s10653-014-9644-1
4. Arnold, M.C.; Lindberg, T.T.; Liu, Y.-T.; Porter, K.A.; Hsu-Kim, H.; Hinton, D.E.; Di Giulio, R.T. (2014). Bioaccumulation and speciation of selenium in fish and insects collected from a mountaintop removal coal mining-impacted stream in West Virginia. *Ecotoxicology*. 1-10. DOI: 10.1007/s10646-014-1236-4.
5. Pham, A. L.-T.; Morris, A., Zhang, T., Ticknor, J.; Levard, C.; Hsu-Kim, H. (2014). Precipitation of Nanoscale Mercuric Sulfides in the Presence of Natural Organic Matter: Structural Properties, Aggregation, and Biotransformation. *Geochim. Cosmochim. Acta*. 133, 204-215. DOI: 10.1016/j.gca.2014.02.027.
6. Yang, X.; Jiang, C.; Hsu-Kim, H.; Badireddy, A.R.; Dykstra, M.; Wiesner, M.R.; Hinton, D.E.; Meyer, J. (2014). Silver nanoparticle behavior, uptake, and toxicity in *Caenorhabditis elegans*: Effects of natural organic matter. *Environ. Sci. & Technol*. 48(6), 3486–3495. DOI: 10.1021/ es404444n.
7. Ticknor, J.L.; Hsu-Kim, H.; Deshusses, M.A. (2014). A robust framework to predict mercury speciation in combustion flue gases. *J. Hazardous Materials*. 264, 380-385. DOI: 10.1016/j.jhazmat.2013.10.052.
8. Liu, Y.-T.; Chen, T.-Y.; Mackebee, W.G.; Ruhl, L.; Vengosh, A.; Hsu-Kim, H. (2013). Selenium speciation in coal ash spilled at the Tennessee Valley Authority Kingston site. *Environ. Sci. & Technol*. 47(24), 14001-14009. DOI: 10.1021/es4041557.
9. Hagan, N.; Robins, N.; Hsu-Kim, H.; Halabi, S.; Espinoza Gonzales, R.D.; Richter, D.; Vandenberg, J. (2013). Residential mercury contamination in adobe brick homes in Huancavelica, Peru. *PLoS ONE*. 8(9), e75179. DOI: 10.1371/journal.pone.0075179.
10. Hsu-Kim, H.; Kucharzyk, K.H.; Zhang, T.; Deshusses, M.A. (2013). Mechanisms regulating mercury bioavailability for methylating microorganisms in the aquatic environment: A critical review. *Environ. Sci. & Technol*. 47(6), 2441-2456. DOI: 10.1021/es304370g.
11. Bartov, G.; Deonarine, A.; Johnson, T.M.; Ruh,l L.; Vengosh, A.; Hsu-Kim, H. (2013). Environmental impacts of the Tennessee Valley Authority Kingston coal ash spill. 1. Source apportionment using mercury stable isotopes. *Environ. Sci. & Technol*. 47(4), 2092-2099. DOI: 10.1021/es303111p.
12. Deonarine, A.; Bartov, G.; Johnson, T.M.; Ruhl, L.; Vengosh, A.; Hsu-Kim, H. (2013). Environmental impacts of the Tennessee Valley Authority Kingston coal ash spill. 2. Effect of coal ash on methylmercury in historically contaminated river sediments. *Environ. Sci. & Technol*. 47(4), 2100-2108. DOI: 10.1021/es303639d.

13. Ruhl, L.; Vengosh, A.; Dwyer, G.; Hsu-Kim, H.; Schwartz, G.; Romanski, A.; Smith, S.D. (2012). The impact of coal combustion residue effluent on water resources: a North Carolina example. *Environ. Sci. & Technol*. 46(21), 12226–12233. DOI: 10.1021/es303263x.
14. Gondikas, A.P.; Morris, A.; Reinsch, B.C.; Marinakos, S.M.; Lowry, G.V.; Hsu-Kim, H. (2012). Cysteine-induced modifications of zero-valent silver nanomaterials: Implications for particle surface chemistry, aggregation, dissolution, and silver speciation. *Environ. Sci. & Technol*. 46(13), 7037-7045. DOI: 10.1021/es3001757
15. Lowry, G.V.; Espinasse, B.P.; Badireddy, A.R.; Richardson, C.J.; Reinsch, B.C.; Bryant, L.D.; Bone, A.J.; Deonarine, A.; Chae, S.; Therezien, M.; Colman, B.P.; Hsu-Kim, H.; Bernhardt, E.S.; Matson, C.W.; Wiesner, M.R. (2012). Long-term transformation and fate of manufactured Ag nanoparticles in a simulated large scale freshwater emergent wetland. *Environ. Sci. & Technol*. 46(13), 7027-7036. DOI: 10.1021/es204608d
16. Zhang, T.; Kim, B.; Levard, C.; Reinsch, B.C.; Lowry, G.V.; Deshusses, M.A.; Hsu-Kim, H. (2012). Methylation of mercury by bacteria exposed to dissolved, nanoparticulate, and microparticulate mercuric sulfides. *Environ. Sci. & Technol*. 46(13), 6950-6958. DOI: 10.1021/es203181m
17. Robins, N.; Hagan, N.; Halabi, S.;, Hsu-Kim, H.; Espinoza Gonzales, R.D.; Morris, M.; Woodall, G.; Richter, D.; Heine, P.; Zhang, T.; Bacon, A.; Vandenberg, J. (2012). Estimations of historical atmospheric mercury concentrations from mercury refining and present-day soil concentrations of total mercury in Huancavelica, Peru. *Science of the Total Environment*. 426, 145-154. DOI: 10.1016/j.scitotenv.2012.03.082
18. Gondikas, A. P.; Masion, A.; Auffan, M.; Lau, B. L. T.; Hsu-Kim, H. (2012). Early-stage precipitation kinetics of zinc sulfide nanoclusters forming in the presence of cysteine. *Chemical Geology*. 329, 10-17. DOI: 10.1016/j.chemgeo.2011.06.009
19. Yang, X.; Gondikas, A.; Marinakos, S.M.; Auffan, M.; Liu, J.; Hsu-Kim, H.; Meyer, J.N. (2012). The mechanism of silver nanoparticle toxicity is dependent on dissolved silver and surface coating in *Caenohabditis elegans*. *Environ. Sci. & Technol*. 46(2), 1119-1127. DOI: 10.1021/es202417t
20. Shuen, J.A.; Elia, A.R.; Xu, K.; Chen, C.-F. J.; Jiang, A.; Litkowski, E.; Bonhivert, A.; Hsu-Kim, H.; Schwartz-Bloom, R.D. (2011), FEMMES: A one-day mentorship program to engage 4^{th} – 6^{th} grade girls in STEM activities. *Journal of Women and Minorities in Science and Engineering*. 17(4), 295-312. DOI: 10.1615/JWomenMinorScienEng.2011002292
21. Chen, C.-F. J.; Jiang, A.; Litkowski, E.; Elia, A.R.; Shuen, J.A.; Xu, K.; Bonhivert, A.; Hsu-Kim, H.; Schwartz-Bloom, R.D. (2011). Females excelling more in math, engineering, and science (FEMMES): An after-school STEM program for girls that fosters hands-on learning and female-to-female mentorship. *Journal of Women and Minorities in Science and Engineering*. 17(4), 313-324. DOI: 10.1615/JWomenMinorScienEng.2011002293
22. Hagan, N.; Robins, N.; Hsu-Kim, H.; Zhang, T.; Morris, M.; Woodall, G.; Halabi, S.; Bacon, A.; Richter, D.D.; Vandenberg, J. (2011) Estimating Historical Atmospheric Mercury Concentrations from Silver Mining and their Legacies in Present-Day Soils in Potosí, Bolivia. *Atmospheric Environment*. 45, 7619-7626. DOI: 10.1016/j.atmosenv.2010.10.009.
23. Bryant, L.D.; Hsu-Kim, H.; Gantzer, P.A.; Little, J.C. (2011) Solving the problem at the source: controlling Mn release at the sediment-water interface via hypolimnetic oxygenation. *Water Research*. 45, 6381-6392. DOI: 10.1016/j.watres.2011.09.030

24. Aiken, G.R.; Hsu-Kim, H.; Ryan, J.N. (2011). Influence of dissolved organic matter for the environmental fate of metals, nanoparticles, and colloids. *Environ. Sci. & Technol*. *45*, 3196–3201. DOI: 10.1021/es103992s.
25. Deonarine, A.; Lau, B.L.T.; Aiken, G.R.; Ryan, J.N.; Hsu-Kim, H. (2011). Effects of humic substances on precipitation and aggregation of zinc sulfide nanoparticles. *Environ. Sci. & Technol*. 45, 3217–3223. DOI: 10.1021/es1029798.
26. Ruhl, L.; Vengosh, A.; Dwyer, G.S.; Hsu-Kim, H.; Deonarine, A. (2010). Environmental Impacts of the Coal Ash Spill in Kingston, Tennessee: An Eighteen-Month Survey, *Environ. Sci. & Technol*. *44*, 9272-9278. DOI: 10.1021/es1026739
27. Zhang, T. and Hsu-Kim, H. (2010). Photolytic degradation of methylmercury enhanced by binding to natural organic ligands. *Nature Geoscience*. *3*(7), 473-476. DOI: 10.1038/NGEO892
28. Gondikas, A.P.; Jang, E.K.; Hsu-Kim, H. (2010). Influence of amino acids cysteine and serine on aggregation kinetics of zinc and mercury sulfide colloids. *J. Colloid and Interface Science*. *347*, 167-171. DOI: 10.1016/j.jcis.2010.03.051
29. Ruhl, L.; Vengosh, A.; Dwyer, G. S.; Hsu-Kim, H.; Deonarine, A.; Bergin, M.; Kravchenko, J. (2009). Survey of the potential environmental and health impacts in the immediate aftermath of the coal ash spill in Kingston, Tennessee. *Environ. Sci. & Technol*.*43*, 6323-6333. DOI: 10.1021/es900714p
30. Deonarine, A. and Hsu-Kim, H. (2009). Precipitation of mercuric sulfide nanoparticles in NOM-containing water: Implications for the natural environment. *Environ. Sci. & Technol*. *43*, 2368-2373. DOI: 10.1021/es803130h
31. Lau, B.L.T. and Hsu-Kim, H. (2008). Precipitation and growth of Zn-sulfide nanoparticles in the presence of thiol-containing natural organic ligands. *Environ. Sci. & Technol*. *42*, 7236-7241. DOI: 10.1021/es801360b
32. Hsu-Kim, H.; Mullaugh, K.M.; Tsang, J.J.; Yucel, M.; Luther, G.W. (2008). Formation of Zn- and Fe-sulfides near hydrothermal vents at the Eastern Lau Spreading Center: Implications for sulfide bioavailability to chemoautotrophs. *Geochem. Trans*. 9:6. DOI: 10.1186/1467-4866-9-6
33. Waite, T.J.; Moore, T.S.; Childress, J.J.; Hsu-Kim, H.; Mullaugh, K.M.; Nuzzio, D.B.; Paschal, A.N.; Tsang, J.; Fisher, C.R.; and Luther, G.W. (2008). Variation in sulfur speciation with shellfish presence at a Lau Basin diffuse flow vent site. *J. Shellfish Res*. *27*(1), 163-168.
34. Hsu-Kim, H. (2007). Stability of Metal-Glutathione Complexes During Oxidation by Hydrogen Peroxide and Cu(II)-Catalysis. *Environ. Sci. & Technol*. *41*, 2338-2342. DOI: 10.1021/es062269+
35. Tsang, J.J.; Rozan, T.F.; Hsu-Kim, H.; Mullaugh, K.M.; Luther, G.W. (2006). Pseudopolarographic determination of Cd^{2+} complexation in freshwater. *Environ. Sci. & Technol*. *40*, 5388-5394. DOI: 10.1021/es0525509
36. Hsu-Kim, H. and Sedlak, D. L. (2005). Similarities between inorganic sulfide and the strong Hg(II)-complexing ligands in municipal wastewater effluent. *Environ. Sci. & Technol*. *39*, 4035-4041. DOI: 10.1021/es050013i
37. Hsu, H. and Sedlak, D. L. (2003). Strong mercury(II) complexation in wastewater effluent and surface waters. *Environ. Sci. & Technol*. *37*, 2743-2749. DOI: 10.1021/es026438b

Editorial Contributions

Hsu-Kim H., Cory R.M. "Water Chemistry by P.L. Brezonik and W.A. Arnold: A new textbook for environmental aquatic chemistry". AEESP Newsletter. *47*(1), 9. January 2012. http://www.aeesp.org/pdf/publications/AEESPNL.47.1.2012.pdf

Aiken G., Hsu-Kim H., Ryan J., Alvarez P. "Guest Comment: Nanoscale Metal-Organic Matter Interactions". Guest editors G.R. Aiken, H.Hsu-Kim and J.N. Ryan. Special focus issue of *Environmental Science & Technology*. *45*, 3194–3195. April 15, 2011. **DOI:** 10.1021/es2007148

Invited Speaker at Conferences

Hsu-Kim H., Zhang T., Kucharzyk K., Ticknor J., Pham A., Deshusses M.A. Nanoscale mercury-sulfide-organic matter interactions: Implications for mercury bioavailability and methylation potential. International Conference on Mercury and a Global Pollutant. Edinburg, UK. July 29 – August 2, 2013.

Association of Environmental Engineering and Science Professors. Invited panelist for the workshop "Starting out on the right foot: Tips for success for aspiring and new faculty". 2013 AEESP 50th Anniversary Conference. July 14-16, 2013. Golden, CO.

Department of Energy Terrestrial Ecosystem Science and Subsurface Biogeochemical Research Program Joint Investigators Meeting. "Reactivity and Bioavailability of Nanoscale Mercury Sulfides". May 14-15, 2013. Potomac, MD.

American Chemical Society 245th National Meeting. "Nanogeochemistry of a neurotoxin: Reactivity and microbial methylation potential of nanoscale mercury sulfides". April 7-11, 2013. New Orleans, LA.

Gordon Research Conference on Environmental Sciences: Water. "Is this nano stuff for real?: Connecting nanomaterials research to trace element geochemistry and bioavailability". Holderness, NH. June 24-29, 2012.

German-American Frontiers of Engineering Symposium. National Academy of Engineering and the Alexander von Humboldt Foundation. Invited speaker: "Nanomaterials in the Aquatic Environment: Persistence, Transformations, and Bioavailability". March 28-31, 2012. Potsdam, Germany.

9th Annual UNU-GIST Joint Programme Symposium. Urban Water Quality: Challenges and Emerging Issues for Sustainable Cities. "Nanoscale mercury-organic matter interactions: Implications for mercury bioavailability in contaminated sediments". October 11-13, 2011. Gwangju, South Korea.

Hsu-Kim H., Gondikas A., Deonarine A., Masion A., Auffan M. Sorption of natural organic ligands to silver and zinc sulfide nanoparticles: Implications for aggregation and dissolution. Invited talk for the 20th Annual V.M. Goldschmidt Conference Knoxville, TN. June 21-25, 2010.

Hsu-Kim H., Deonarine A., Lau B. (2008) "Stabilization of nanoparticulate HgS and ZnS by thiols and humic substances during metal-sulfide precipitation". 18th Annual V.M. Goldschmidt Conference Vancouver, Canada, July 2008.

Bridges to Engineering 2020: Foundations for National Partnerships. North Carolina A&T State University. March 12-14, 2008. Greensboro, NC.

Invited Seminars at Universities and Institutions

Washington University in St.Louis. Department of Energy, and Environmental, and Chemical Engineering. "Disposal of Coal Ash Wastes: New Considerations for Identifying Environmental Risks". October 3, 2014

University of Connecticut, Department of Civil & Environmental Engineering. "Disposal of Coal Ash Wastes: New Considerations for Identifying Environmental Risks". March 27, 2014.

Elon University, Department of Chemistry. "Neurotoxins and Nanoparticles: An engineer's use of nanogeochemistry to solve the environmental mercury problem". November 21, 2013.

North Carolina State University, Department of Environmental and Molecular Toxicology. "Trace element toxins in coal ash wastes: New considerations for identifying environmental risks". April 23, 2013.

Harvard University, School of Engineering and Applied Sciences. "Nanogeochemistry of a Neurotoxin: Lessons from the Environmental Nanosciences for Understanding and Controlling Mercury Contamination". April 1, 2013.

ETH-Zürich, Department of Environmental Systems Science. "Nanogeochemistry of a Neurotoxin: Implications of nanoscale mercury for bioavailability in the aquatic environment". October 8, 2012

University of Illinois – Chicago. "Nanogeochemistry of a Neurotoxin: Implications of nanoscale mercury for bioavailability in the aquatic environment". September 27, 2012

Environmental Protection Agency. Invited keynote speaker for Asian American Pacific Islander Heritage Month. "Nanochemistry of a Neurotoxin: Bioavailability of mercury nanoparticles in the environment". Research Triangle Park, NC. May 29, 2012.

Duke University Program in Ecology. "Coal Ash Waste Storage: Mobilization and Geochemical Transformations of Trace Element Contaminants". April 20, 2012

Stanford University. Department of Geological and Environmental Sciences. "Nanogeochemistry of a Neurotoxin: Implications of nanoscale mercury for bioavailability in the aquatic environment". February 23, 2012.

RTI International. "Nanogeochemistry of a Neurotoxin: Implications of nanoscale mercury for bioavailability in the aquatic environment". February 29, 2012.

Yale University. Department of Chemical and Environmental Engineering. "Nanogeochemistry of a Neurotoxin: Implications of nanoscale mercury for bioavailability in the aquatic environment". January 25, 2012.

Duke University Integrated Toxicology and Environmental Health Program Fall 2011 seminar series. "Nanoscale metal-organic matter interactions: Implications for mercury bioavailability in contaminated sediments". October 7, 2011. Durham, NC.

DuPont Engineering Research Technology Soils and Sediments Network Meeting. "Assessing mercury bioavailability in contaminated sediments". September 7, 2011. Wilmington, DE.

N.C. State University, Department of Soil Science Seminar Series. "Nanoscale Metal-Organic Matter Interactions: Implications for the Environmental Fate and Bioavailability of Natural and Manufactured Nanomaterials". February 23, 2011. Raleigh, NC.

North Carolina Department of Environmental and Natural Resources, Division of Water Quality, Planning Division. "Geochemical Precursors for Methylmercury Production

and Degradation: Implications for water quality management". August 13, 2010. Raleigh, NC.

Duke University Earth and Ocean Sciences Seminar Series. March 20, 2009.

Duke University Chautauqua Lecture Series. "Mercury pollution in our environment: Current health hazards and our clean energy future". March 26, 2009. Durham,NC.

University of North Carolina-Wilmington, Department of Chemistry Seminar Series. "Environmental Nanoparticles: Implications for the fate of mercury and pollutant metals in the aquatic systems". February 6, 2009. Wilmington, NC.

Georgia Institute of Technology Environmental Engineering Seminar Series. "Mercury Speciation in Municipal Wastewater and Effluent-Receiving Waters: The Role of Inorganic Sulfide". October 11, 2006, Atlanta, GA.

Virginia Polytechnic Institute Environmental and Water Resources Engineering Seminar Series. "Complexation of Hg(II) by inorganic sulfide in municipal wastewater effluent". March 17, 2006, Blacksburg, VA.

North Carolina State University Water Resources and Environmental Engineering Seminar Series. "Aqueous sulfide speciation at deep-sea hydrothermal vents". February 6, 2006. Raleigh, NC.

Duke University CEE Mechanics and the Environment Seminar Series. "Microelectrodes as tools for assessing aqueous sulfide speciation at deep-sea hydrothermal vents". September 21, 2005, Durham, NC.

Conference symposia chaired

"Women in Environmental Science and Engineering", 248th American Chemical Society National Meeting, Division of Environmental Chemistry, August 10-14, 2014, San Francisco, CA.

"Biogeochemical Processes Influencing Mobilization, Transformations, and Bioavailability of Mercury", Goldschmidt 2014, Sacramento, CA, June 8-13, 2014.

"Assessing micropollutant dynamics in the Earth's Critical Zone", 21th Annual V.M. Goldschmidt Conference Prague, Czech Republic. August 15-19, 2011.

"Influence of Natural Organic Matter on the Fate and Transport of Metals, Colloids, and Nanoparticles in Aquatic Systems", American Chemical Society National Meeting, Division of Environmental Chemistry, March 2010, San Francisco, CA

Media Coverage of Hsu-Kim research

Schrope, M. "Methylmercury Levels Spiked After Tennessee Coal Ash Spill". Chemical & Engineering News. January 3, 2013. http://cen.acs.org/articles/91/web/2013/01/Methylmercury-Levels-Spiked-Tennessee-Coal.html

Wigginton, N. "Not-So-Quicksilver". Science, January 6, 2012. 335 (6064): 14. DOI:10.1126/science.335.6064.14-b

Schmidt, C. "Coal Ash Spill In Tennessee Still A Problem; Environmental Disaster: High levels of arsenic linger downstream of the site of a 2008 accident". Chemical & Engineering News. December 6, 2010. *88*(49), 13. http://pubs.acs.org/cen/news/88/i49/8849news1.html

Yurkiewicz I. "Saltwater Chemistry Boosts Mercury in Fish". Raleigh News & Observer. July 5, 2010. http://www.newsobserver.com/2010/07/05/565744/saltwater-chemistry-boosts-mercury.html

Vaidyanathan G. “CHEMICALS: Scientists offer some clues to how mercury enters ocean”. Greenwire. June 28, 2010. http://www.eenews.net/eenewspm/2010/06/28/7/

Bhanoo S.N. “Toxic Mercury Is More at Home in Seawater, Study Finds”. *In:* Green; A Blog about Energy and the Environment. The New York Times. June 28, 2010. http://green.blogs.nytimes.com/2010/06/28/toxic-mercury-delights-more-in-seawater-study-finds/

Current Grants

NIEHS. “Biogeochemical Framework to Evaluate Mercury Methylation Potential During In-Situ Remediation of Contaminated Sediments”. PI: Hsu-Kim, Deshusses, Elias. $652,000, 8/1/2014 – 6/30/2018.

National Science Foundation. “Partnerships in International Research and Education: Water and Commerce -Technologies to Enable Environmental Sustainability in Global Markets”. PI: Ferguson, Wiesner, Golden, Bang, Tarabara, and Rose; Co-I: Hsu-Kim and others. 1/1/2013 – 12/31/2017.

National Science Foundation. “Collaborative Research: Characterization of contaminants and isotopic tracers associated with coal combustion products”, PI: Hsu-Kim, Co-PI: Vengosh. $304,787, 9/1/2012 – 8/31/2015.

Alstadt Foundation. “FEMMES 2015: Females Excelling More in Math, Engineering and Science”. PI: Hsu-Kim. $8,000. 7/1/2014 – 6/30/2015.

DOE Early Career Research Award, “Nanoscale Mercury Sulfide-Organic Matter Interactions and Implications for Solubility and Biomethylation”. PI: Hsu-Kim. $759,941, 6/15/2011 – 6/14/2016.

NIH/NIEHS Superfund Research Center. “Project 4: Synergy and Antagonism in Nano-Bio Based Strategies for Sediment Remediation”. PI: Wiesner, Co-PI: Gunsch, Hsu-Kim. $2,338,908, 4/1/2011 – 3/31/2016.

National Science Foundation. “Influence of Chelating Ligands for the Aggregation, Dissolution and Bioavailability of Soluble Nanomaterials”. PI: Hsu-Kim, Co-PI: Matson, DiGiulio. $337,419. 5/1/2011 – 4/30/2015.

National Science Foundation “Center for the Environmental Implications of Nanotechnology (CEINT)”. PI: Wiesner, Lowry, DiGiulio, Hochella, Jones; Co-I: Hsu-Kim and others. 10/1/08-9/30/2018.

Past Grants

Alstadt Foundation. “FEMMES 2015: Females Excelling More in Math, Engineering and Science”. PI: Hsu-Kim. $8,000. 7/1/2013 – 6/30/2014.

Duke Global Health Institute and Duke Pratt School of Engineering. “Evaluating the impact of mercury contamination on human and environmental welfare in the Madre de Dios / Beni Watersheds in Peru and Bolivia”, PI: Pan, Co-PI: Deshusses, Hsu-Kim, Marani, Pattanayak. $40,000, 9/15/2012 – 9/14/2013.

Mary Duke Biddle Foundation “FEMMES 2012: Females Excelling More in Math, Engineering and Science”, PI: Hsu-Kim, $3,000. 10/1/2011 – 9/30/2012.

Environmental Protection Agency. “Mercury and Metal Contamination from Historical Mining at South American Urban Communities”. PI: Hsu-Kim. $24,856. 9/15/2011 – 3/31/2013.

Alstadt Foundation. “FEMMES 2012: Females Excelling More in Math, Engineering and Science”. PI: Hsu-Kim. $5,000. 7/1/2011 – 6/30/2012.

North Carolina Water Resources Research Institute. "The Impact of Coal Combustion Products on the Quality of Water Resources in North Carolina". PI: Vengosh, Co-PI: Hsu-Kim. $50,000. 3/1/2011 – 2/28/2012.

DoD Strategic Environmental Research and Development Program. "Bioavailability and Methylation Potential of Mercury Sulfides in Sediments". PI: Hsu-Kim, co-PI: Deshusses. $495,744. 3/1/2010-3/15/2014.

Mary Duke Biddle Foundation "FEMMES 2011: Females Excelling More in Math, Engineering and Science", PI: Hsu-Kim, $3,000. 9/1/08 – 8/31/09.

DOE Environmental Remediation Science Program. "Occurrence and Stabilization of Colloidal and Nanoparticulate Mercury Sulfides". PI: Hsu-Kim. $150,000. 6/01/2010-5/31/2012.

Oak Ridge Associated Universities. "Geochemical and Isotope Characterization of TVA Coal Combustion Products: Identification of Contaminants and Modeling Their Fate in the Environment". PI: Vengosh; Co-PI: Hsu-Kim, Hower, Johnson. $357,114. 5/1/2010 – 4/30/2013.

Duke Global Health Institute. "A Tenacious Toxin: Mercury Contamination and Residential Exposure in Huancavelica, Peru and Potosi, Bolivia". PI: Hsu-Kim, co-PI: Robins, Halabi, Richter. $50,000. 3/1/2010-2/28-2012.

National Science Foundation "RAPID: Environmental Effects of the Coal Ash Spill and Remediation at Kingston Tennessee". PI: Vengosh, Co-PI: Hsu-Kim, Dwyer, Baker. $105,393. 6/15/2009-5/31-2010.

Lord Foundation of North Carolina. "FEMMES 2010 (Females Excelling More in Math, Engineering, and Science)". PI: Hsu-Kim. $4,000. 5/1/2009-4/30/2010.

Mary Duke Biddle Foundation "FEMMES 2009: Females Excelling More in Math, Engineering and Science", PI: Hsu-Kim, $4,000. 9/1/08 – 8/31/09.

Center for Global Change, Duke University. "The drought effect on water availability and quality of North Carolina water resources: Groundwater-surface water interaction and contributions of recycled wastewater." Lead-PI: Vengosh, co-PIs: Jackson, Hsu-Kim, Bernhardt. $50,960. 5/1/08-4/30/09.

Lord Foundation of North Carolina. "FEMMES 2009 (Females Excelling More in Math, Engineering, and Science)". PI: Hsu-Kim, $4,000. 5/1/2008-4/30/2009.

Center for Comparative Biology of Vulnerable Populations, Duke University. "Demethylation of methylmercury complexes by hydroxyl radicals: Implications for metabolic transformation of mercury". PI: Hsu-Kim, $49,972. 9/1/07-8/31/08.

Mary Duke Biddle Foundation "FEMMES 2008: Females Excelling More in Math, Engineering and Science", PI: Hsu-Kim, $3,500. 9/1/07 – 8/31/08.

Mary Duke Biddle Foundation. Grant awarded in support of "FEMMES 2008". $3,500. 9/20/07 – 6/30/08.

American Chemical Society Petroleum Research Fund. "Stabilization of Metal-Sulfide Nanoparticles by Natural Organic Matter". PI: Hsu-Kim, $40,000. 2/01/2007-1/31/2009.

NSF Ridge 2000 Postdoctoral Research Fellowship. "Metal sulfide speciation and cluster formation at deep-sea hydrothermal vents". NSF # 0424789, $117,853, Lead-P.I.: Luther; co-PI: Hsu-Kim. 7/1/2004-6/30/2006.

Research Advisees

Postdoctoral Associates:

Boris Lau, 2007-2008

Lee Bryant, 2010-2012
Amanda Morris, 2011-2012
Yu-Ting Liu, 2010-2013
Kate Kucharzyk, 2011-2014
Sung-Woo Lee, 2013-2014
Gretchen Gehrke, 2012-present
Anh Pham, 2012-present

Graduate students:
Graduated:
Amrika Deonarine, Ph.D., 2011
Tong Zhang, Ph.D., 2012
Andreas Gondikas, Ph.D., 2012
In-Progress:
Grace Schwartz, Ph.D. candidate, 2010-present
Jonathan Ticknor, Ph.D. candidate, 2011-present
Chuanjia Jiang, Ph.D. candidate, 2011-present
Sarah Diringer, Ph.D. candidate, 2011-present
Andrew Matsumoto, Ph.D. candidate, 2012-present
Ross Taggart, Ph.D. candidate, 2012-present
Jane Cooper, Ph.D. candidate, 2013-present (co-advised with A. Vengosh)
Abigail McEwen, MEM candidate, 2013-present

Undergraduate:
Kristen Jenkins, biology major, graduated 2008
Natalya Polishchuk, REU student, summer 2007
Patrick Canning, CEE major, graduated 2009
Brian Au, CEE major, graduating 2012
Marianne Leonhardt, CEE major, graduating 2012
Greer Mackabee, CEE major, graduating 2012
Andrew Matsumoto, REU student, summer 2011
Karen Yu, REU student, summer 2011
Zakary Goldberg, REU student, summer 2013
Marika Nell, REU student, summer 2013
Lauren Riedle, UNC Env. Sci. major, 2013-2014
Laura Roger, Environ. Sci. major, spring 2014 – present
Osman Ulug, REU student, summer 2014
Devon Manley, REU student, summer 2014

High School:
Eileen Jang, summer (Howard Hughes program) 2008-2009
Avi Aggarwaal, summer (Howard Hughes program) 2010-11

Graduate Thesis Committees (* denotes Hsu-Kim advisee)
Mariah Arnold, Summer 2014 (NSOE)
Charles Delannoy, Spring 2014 (CEE)
Xinyu Yang, Spring 2014 (NSOE)

Lauren Barton, Spring 2014 (CEE)
Yao Xiao, Fall 2012, Ph.D. (CEE)
Shihong Lin, Fall 2012, Ph.D. (CEE)
Laura Ruhl, Summer 2012, Ph.D. (NSOE)
Christina Arnaout, Summer 2012, Ph.D. (CEE)
Laura Ruhl, Summer 2012, Ph.D. (NSOE)
*Tong Zhang, Spring 2012, Ph.D. (CEE)
*Andreas Gondikas, PhD., Spring 2012 (CEE)
Brian Reinsch, Ph.D., Spring 2012 (CEE, Carnegie Mellon Univ.)
Scott Loughery, Spring 2012, M.S. (CEE)
Osman Karatum, Spring 2012, M.S. (CEE)
Kaoru Ikuma, Fall 2011, Ph.D. (CEE)
Hadas Raanan, Fall 2011, Ph.D. (NSOE)
David Jassby, Summer 2011, Ph.D. (CEE)
*Amrika Deonarine, Spring 2011, Ph.D. (CEE)
David Vinson, Spring 2011, Ph.D. (NSOE)
Shihong Lin, Spring 2011, M.S. (CEE)
Changheng Zhang, Summer 2010, M.S. (CEE)
Yaohuan Gu, Spring 2010, M.S. (CEE)
Changlong Wu, Summer 2008, Ph.D. (CEE)
E. Matt Hotze, Fall 2008, Ph.D. (CEE)
J. Bandy, Spring 2007, M.S.; Spring 2009 Ph.D. (CEE)

In progress PhD dissertation committees (department, anticipated graduation):
* Jonathan Ticknor (CEE, Fall 2014)
* Grace Schwartz (CEE, Spring 2015)
* Sarah Diringer (CEE, Fall 2016)
* Chuanjia Jiang (CEE, Fall 2016)
Jennifer Harkness (NSOE, Spring 2016)
Carley Gwin (CEE, Spring 2016)
Lauren Wyatt (NSOE, Fall 2016)

Professional Affiliations

Memberships: American Chemical Society, Society of Environmental Toxicology and Chemistry, Association of Environmental Engineering and Science Professors, American Geophysical Union, Geochemical Society
Academic honor societies: Tau Beta Pi, Chi Epsilon, and Phi Beta Kappa

Technical Advisory

Internal Peer Review Technical committee. Water Environment Research Foundation-sponsored project titled "Estimation of Mercury Bioaccumulation from Wastewater Treatment Plants in Receiving Waters". 2007-2008.

Technical reviewer for “Wetland Design and Management Options for Control of Mercury in San Francisco Bay”. California State Water Board. April 2007. Hsu H. (2004) “Mercury biogeochemistry and removal during municipal wastewater treatment”. Technical report for the City of San Jose Environmental Services Department.

Service and Outreach Activities

Duke University & Pratt School of Engineering

Duke University Diversity Task Force (2014-2015)

Engineering Faculty Council (2013-2015)

University Campus Sustainability Committee (2013-present)

Environmental Engineering faculty search committee, chair (2013-15)

University Committee on Facilities & Environment (2012-2015)

Academic Council. Representative from the Pratt School of Engineering. April 2012-2016.

Pratt Engineering EXCEL Building faculty planning committee (spring 2007).

Scientific Community

NSF Workshop Participant "Geobiology and Microbial Geochemistry Workshop", October 10-12, 2013.

NSF Workshop Participant, "Future Directions in Geobiology and Low-Temperature Geochemistry", September 27-28, 2010

Patterson Award Committee, Geochemical Society, 2008-2011

Community/K-12 Outreach

NanoDays volunteer. North Carolina Museum of Life & Sciences. 2011 and 2012. Developed an activity titled *NanoToss* for museum visitors.

Research mentor for Pratt NSF-REU (summer 2007-08, 2010), Howard Hughes Precollege Program in the Biological Sciences.

FEMMES (Females Excelling More in Math, Engineering, and Science), Faculty advisor and workshop volunteer (2007-present).

Volunteer: North Carolina statewide Envirothon competition for high school and middle school students (April 28, 2007)

Peer-Reviewer

Journals: Env. Sci & Technol., Geochim Cosmochim Acta, J Geophys Res, Sci Total Env, Analytical Chem, Water Res,

Grant Proposal Reviews: NSF, California Water Resources Control Board, Dept of Energy

Conference Papers (Peer-reviewed)

1. Weston V., Bohnivert A., Elia A., Hsu-Kim H., Ybarra G. (2008). Work in Progress: A STEM Educational Outreach Day for Young Females. Proceedings of the ASEE/IEEE Frontiers in Education Conference. October 22-25, 2008. Saratoga Springs, NY. Article number 4720570, Pages S2D9-S2D10. DOI: 10.1109/FIE.2008.4720570s.

Conference Proceedings (presenter is underlined)

2. Schwartz, G.; Hsu-Kim, H., Vengosh, A. Trace Element Toxins in Coal Ash: New considerations for identifying environmental risks. 248th American Chemical Society National Meeting, San Francisco, CA, August 10-14, 2014.
3. Jiang, C.; Aiken, G.R.; Hsu-Kim, H. Effects of natural organic matter properties on the dissolution kinetics of zinc oxide nanoparticles. Goldschmidt. Sacramento, CA. June 8 – 13, 2014.

4. Pham A.L.T., Morris A., Zhang T., Liu Y.-T., Hsu-Kim H. Structural properties of nanoscale mercury sulfides: Implications for microbial bioavailability and biotransformation. 2013 AEESP 50th Anniversary Conference. Golden, CO. July 14-16, 2013.
5. Schwartz G., Hsu-Kim H. Transformations of mercury, arsenic, and selenium in river sediments contaminated with coal ash: Sediment microcosm studies. World of Coal Ash Conference. Lexington, KY. April 22-25, 2013.
6. Hsu-Kim H., Zhang T., Kucharyzyk K.H., Ticknor J., Pham A.L.T., Deshusses M.A. Nanogeochemistry of a neurotoxin: Reactivity and microbial methylation potential of nanoscale mercury sulfides. 245th National Spring Meeting of the American-Chemical-Society. New Orleans, LA. April 7-11, 2013.
7. Ruhl L.S., Vengosh A., Dwyer G.S., Hsu-Kim H., Schwartz G.E. Impact of coal combustion residues on water quality. 245th National Spring Meeting of the American-Chemical-Society. New Orleans, LA. April 7-11, 2013.
8. Schwartz G., Hsu-Kim H. Transformations of mercury, arsenic and selenium in river sediments contaminated with coal ash: sediment microcosm studies. Geological Society of America Annual Meeting. Charlotte, NC. November 4-7, 2012.
9. Liu Y.-T., Chen, T.-Y., Mackebee W.G., Hsu-Kim H. Speciation and release of selenium in coal ash from the Tennessee Valley Authority Kingston Fossil Plant. Geological Society of America Annual Meeting. Charlotte, NC. November 4-7, 2012.
10. Zhang T., M.A. Deshusses, H. Hsu-Kim. Production of methylmercury by sulfate-reducing bacteria exposed to mercuric sulfide nanoparticles. 243rd ACS National Meeting, San Diego, CA. March 25-29, 2012.
11. Hsu-Kim H., Deonarine A., Gondikas A.P., Zhang T., Morris A., Aiken G.R., Ryan J.N. Influence of dissolved organic matter for the precipitation of nanoparticulate metal sulfides. 21th Annual V.M. Goldschmidt Conference Prague, Czech Republic. August 15-19, 2011.
12. Gondikas A.P., Reinsch B., Lowry G.V., Hsu-Kim H. Influence of Thiol-Containing Ligands for the Aggregation and Dissolution of Metallic Silver Nanomaterials 21th Annual V.M. Goldschmidt Conference Prague, Czech Republic. August 15-19, 2011.
13. Deonarine A., Hsu-Kim H., Ruhl L, Vengosh A., Bartov G., Johnson T. Methylation potential of mercury derived from a coal ash spill: Finds from the TVA Kingston disaster. International Conference on Mercury as a Global Pollutant., Halifax, Nova Scotia. July 25-29, 2011.
14. Zhang T., Hsu-Kim H., Deshusses M.A. The influence of kinetically-limited mercury sulfide precipitation on mercury bioavailability for methylation by pure cultures of sulfate reducing bacteria. International Conference on Mercury as a Global Pollutant., Halifax, Nova Scotia. July 25-29, 2011.
15. Hsu-Kim H., Deonarine A., Gondikas A., Zhang T., Lau B.L.T., Aiken G.R., Ryan J.N., Masion A., Auffan M., Deshusses M.A. Nanoscale Metal Sulfide-Organic Matter Interactions: Implications for Mercury Speciation and Methylation Potential. International Conference on Mercury as a Global Pollutant., Halifax, Nova Scotia. July 25-29, 2011.
16. Hagan N., Robins N., Hsu-Kim H. Halabi S., Morris M., Woodall G., Richter G., Vandenberg J. Estimation of historical exposure to elemental mercury vapor and present-day exposure to mercury and other metals in soil in Huancavelica, Peru and Potosi, Bolivia. International Conference on Mercury as a Global Pollutant., Halifax, Nova Scotia. July 25-29, 2011.

17. Robins N., Hagan N., Halabi S., Hsu-Kim H., Esponoza Gonzales R.D., Richter D., Vandenberg J. Evaluation of residential exposure to historical mercury contamination in Huncavelica, Peru. International Conference on Mercury as a Global Pollutant., Halifax, Nova Scotia. July 25-29, 2011.
18. Hsu-Kim H., Deonarine A., Gondikas A., Zhang T., Deshusses M.A. Natural organic matter interactions with metal-based nanomaterials: Implications for aggregation, dissolution, and bioavailability. AEESP Education and Research Conference. Tampa, FL. July 10-12, 2011.
19. Zhang T., Hsu-Kim H. Deshusses M.. Microbial methylation of mercury sulfide nanoparticles: Influence of particle size and crystallinity on methylation potential. 3rd Annual International Conference on the Environmental Implications of NanoTechnology. Durham, NC. May 9-11, 2011.
20. Gondikas A., Reinsch B., Lowry G., Hsu-Kim H. Sorption of cysteine to silver nanoparticles: Implications for aggregation, dissolution, and silver speciation. 3rd Annual International Conference on the Environmental Implications of NanoTechnology. Durham, NC. May 9-11, 2011.
21. Hsu-Kim H., Gondikas A., Deonarine A., Masion A., Auffan M. Sorption of natural organic ligands to silver and zinc sulfide nanoparticles: Implications for aggregation and dissolution. Invited talk for the 20th Annual V.M. Goldschmidt Conference Knoxville, TN. June 21-25, 2010.
22. Zhang T., Hsu-Kim H. (2010). Photodegradation of methylmercury is enhanced by complexation with thiol-containing natural organics. 20th Annual V.M. Goldschmidt Conference Knoxville, TN. June 21-25, 2010.
23. Deonarine A., Lau B., Hsu-Kim H. (2010) Growth and aggregation of ZnS nanoparticles during coprecipitation with aquatic humic substances. National Meeting of the American Chemical Society, March 21-25, 2010. San Francisco, CA.
24. Zhang T. and Hsu-Kim H. (2010) Thiol complexation of methylmercury enhances indirect photodemethylation by singlet oxygen. National Meeting of the American Chemical Society, March 21-25, 2010. San Francisco, CA.
25. Zhang T., Hsu-Kim H. (2010). Photodemethylation of mercury by indirect photolysis of methylmercury-thiol complexes. Geological Society Northeastern/Southeastern Section Meeting. Baltimore, MD. March 13-16, 2010.
26. Gondikas A. and Hsu-Kim H. (2009). Surface interactions of thiol-containing organic acids with zinc sulfide and silver nanoparticles. ICEIN meeting, September 9-11, 2009. Washington, DC.
27. Deonarine A. and Hsu-Kim H. (2009) Precipitation of mercuric sulfide nanoparticles in NOM-containing water: Implications for the natural environment. Invited presentation for the Ellen C. Gonter Award. National Meeting of the American Chemical Society, August 16-20, 2009. Washington, DC.
28. Gondikas A. and Hsu-Kim H. (2009). Aggregation kinetics of environmental zinc sulfide nanoparticles. International Conference on Particle Separation and Nanoparticles in Water. June 3-5, 2009, Duke University.
29. Zhang T. and Hsu-Kim H. (2009). Effect of thiol-containing ligands on photoinduced demethylation of methylmercury complexes. 9th International Conference on Mercury as a Global Pollutant. June 7-12, 2009, Guiyang, China.

30. Deonarine A. and Hsu-Kim H. (2009) Stabilization of Nanoparticulate HgS by Thiols and Humic Substances During HgS Precipitation. 9th International Conference on Mercury as a Global Pollutant. June 7-12, 2009, Guiyang, China.
31. Luther G.W., Mullaugh K.M., Yucel M., Rickard D. Spraggins J.M., Ridge D.P., Hsu-Kim H.(2009) Metal sulfide nanoparticles and clusters in the environment. 237th National Meeting of the American Chemical Society. March 22-26, 2009. Salt Lake City, UT
32. Deonarine A. and Hsu-Kim H. (2008) Stabilization of Nanoparticulate HgS by Thiols and Humic Substances During HgS Precipitation. American Geophysical Union Fall Meeting. December 15-19, 2008. San Francisco, CA.
33. Hsu-Kim H., Deonarine A., Lau B. (2008) "Stabilization of nanoparticulate HgS and ZnS by thiols and humic substances during metal-sulfide precipitation". 18th Annual V.M. Goldschmidt Conference Vancouver, Canada, July 2008. *Geochimica et Cosmochimica Acta* . 72(12), A396, Suppl. 1.
34. Hsu-Kim H., Lau B., Deonarine, A. "Stabilization of ZnS nanoparticles by thiol-containing natural organics: Implications for colloidal metal-sulfides in the aquatic environment". Presented at the 235th American Chemical Society National Meeting; New Orleans, April 6-10, 2008.
35. Lau B., Deonarine A. and Hsu-Kim H. Precipitation of ZnS and HgS: The effects of organic ligands and humic substances on colloidal stability. American Chemical Society Colloid and Surface Science Symposium. June 15-18, 2008. Raleigh, NC.
36. Hsu-Kim H., Bryant L., and Little J.C.. "Monitoring Fe and Mn sediment flux in oxygenated reservoirs using voltammetric microelectrodes". American Water Works Association Inorganic Contaminants Workshop. January 27-29, 2008.
37. Hsu-Kim H, Deonarine A, and Lau B. "Precipitation and aggregation of Hg- and Zn-sulfide nanoparticles and colloids in the presence of dissolved natural organics". Society of Environmental Toxicology and Chemistry North America 27th Annual Meeting; Milwaukee, WI, November 11-15, 2007.
38. Hsu-Kim H. "Complexation of mercury(II) in municipal wastewater: Insights for the fate of mercury in effluent-receiving waters". Water Environment Federation WEFTEC 2007. October 13-17, 2007.
39. Hsu-Kim H. (2007). Precipitation and aggregation of ZnS nanoparticles in the presence of low-molecular weight organic acids. 17th Annual V.M. Goldschmidt Conference Cologne, Germany, August 2007 *Geochimica et Cosmochimica Acta* . 71(15), A419-A419, Suppl. 1.
40. Hsu-Kim H. "Precipitation and aggregation of ZnS nanoparticles in the presence of thiol ligands". Presented at the 81st ACS Colloid & Surface Science Symposium, Newark, DE. June 24-27, 2007.
41. Hsu-Kim H. "Stability of metal-thiol complexes in the presence of oxidants". Presented at the Society of Environmental Toxicology and Chemistry North America 26th Annual Meeting; Montreal, QC, November 5-9, 2006.
42. Hsu-Kim H., "Complexation of Mercury by Inorganic Sulfide in Municipal Wastewater Effluent", Presented at the 8th International Conference on Mercury as a Global Pollutant, Madison, WI. August 6-10, 2006.
43. Hsu-Kim H. and Luther G.W. "Stabilization of aqueous zinc-sulfide clusters by organic ligands". Presented at the 231st American Chemical Society National Meeting. Atlanta, GA. March 26-30, 2006.

44. Hsu H. and Sedlak D. L. Strongly complexed Hg(II) in organic matter-containing waters. Presented at the 225th American Chemical Society National Meeting. New Orleans, LA. March 23-27, 2003.
45. Hsu H. and Sedlak D. L. Evidence for strongly complexed Hg(II) in natural waters. Presented at the 224th American Chemical Society National Meeting. Boston, MA. August 18-22, 2002.

Conference Poster Presentations (partial list)

1. Hsu-Kim, H.; Zhang, T.; Ticknor, J.; Kucharyzyk, K.; Pham, A; Deshusses, M.A. Bioavailability and Methylation Potential of Mercury in Contaminated Sediments. Goldschmidt. Sacramento, CA. June 8 – 13, 2014.
2. Diringer, S., Feingold B, Pan W, Ortiz E & Hsu-Kim H. Biogeochemical Cycling of Mercury from Artisanal and Small-Scale Gold Mining in Madre de Dios, Peru, Goldschmidt. Sacramento, CA. June 8 – 13, 2014.
3. Matsumoto A., Schwartz G., Deonarine A., Hsu-Kim H. Application of sequential extractions for assessing mercury speciation in coal combustion products. International Conference on Mercury and a Global Pollutant. Edinburg, UK. July 29 – August 2, 2013.
4. Schwartz G. and Hsu-Kim. Speciation and fate of mercury, arsenic, and selenium in river sediments. International Conference on Mercury and a Global Pollutant. Edinburg, UK. July 29 – August 2, 2013.
5. Ticknor J., Kucharzyk K., Deshusses M.A., Hsu-Kim H. Kinetic modeling of mercury sulfide speciation and bioavailability to methylating bacteria. International Conference on Mercury and a Global Pollutant. Edinburg, UK. July 29 – August 2, 2013.
6. Pham A., Morris A., Zhang T., Liu Y.-T., Hsu-Kim H. Structural properties and bioavailability of nanoscale mercury sulfides. International Conference on Mercury and a Global Pollutant. Edinburg, UK. July 29 – August 2, 2013.
7. Kucharzyk K., Ticknor J., Hsu-Kim H., Deshusses M.A. Assessment of biological and geochemical factors affecting mercury methylation in bacterial enrichments cultured from contaminated marine sediments. International Conference on Mercury and a Global Pollutant. Edinburg, UK. July 29 – August 2, 2013.
8. Diringer S., Hsu-Kim H. Biogeochemical cycling of mercury contamination from small-scale artisanal gold mining in Madre de Dios, Peru. International Conference on Mercury and a Global Pollutant. Edinburg, UK. July 29 – August 2, 2013.
9. Schwartz G. and Hsu-Kim H. Biogeochemical transformations of arsenic, selenium, and mercury in river sediments contaminated with coal combustion by-products. Association of Environmental Engineering and Science Professors. 2013 AEESP 50th Anniversary Conference. Golden, CO. July 14-16, 2013.
10. Hsu-Kim H., Pham A.L.T., Zhang T., Ticknor J., Morris A. Dissolution potential and bioavailability of nanoscale mercury sulfides. Department of Energy Terrestrial Ecosystem Science and Subsurface Biogeochemical Research Program Joint Investigators Meeting. Potomac, MD. May 14-15, 2013.
11. Hagan N., Robins N., Hsu-Kim H., Vandenberg, J., Leith D. Mercury speciation and bioaccessibility from adobe bricks and dirt floors in Huancavelica, Peru. Poster presentation. Society of Environmental Toxicology and Chemistry, Long Beach, CA, November 2012.
12. Hagan N., Robins N., Hsu-Kim H., Halabi S., Espinoza Gonzales R.D., Richter D., et al. Bricks that breathe: residential mercury contamination in Huancavelica, Peru. Poster

presentation. Society of Environmental Toxicology and Chemistry, Long Beach, CA, November 2012.

13. T. Zhang, K.H. Kucharzyk, H. Hsu-Kim, M.A. Deshusses. Assessment of the Bioavailability and Methylation Potential of Mercury Sulfides within Sediments Slurry Experiments. Department of Energy Subsurface Biogeochemical Research Program 7th Annual PI Meeting. Washington, DC. April 30 – May 2, 2012.
14. Hsu-Kim H., A. Morris, T. Zhang, K. Kucharzyk, Y. Liu, M.A. Deshusses. Nanoscale Mercury Sulfide-Organic Matter Interactions: Implications for Mercury Methylation Potential in Sediments. Department of Energy Subsurface Biogeochemical Research Program 7th Annual PI Meeting. Washington, DC. April 30 – May 2, 2012.
15. Gondikas A.P., Aggarwal A., Hsu-Kim. Surface modification of metallic silver nanoparticles by low molecular weight thiols: Implications for solubility, aggregation, and bioavailability. 243rd ACS National Meeting, San Diego, CA. March 25-29, 2012.
16. Zhang T., Kucharzyk K., Deshusses M.A., Hsu-Kim H. Methylation of mercuric sulfide nanoparticles by pure cultures of sulfate reducers and mixed cultures in anaerobic sediment microcosms. Partners in Environmental Technology Technical Symposium & Workshop. Washington, DC. November 29 – December 1, 2011.
17. Liu Y.-T., Mackebee W.G., Hsu-Kim H. Speciation and release of selenium in coal ash from the tennessee valley authority kinston fossil plant. 2011 Geological Society of America Annual Meeting. Minneapolis, MN. October 9-12, 2011.
18. Matsumoto A., Schwartz G.E., Deonarine A., Hsu-Kim H. Assessment of mercury speciation in coal ash by sequential extractions. 2011 Geological Society of America Annual Meeting. Minneapolis, MN. October 9-12, 2011.
19. Schwartz G.E., Deonarine A., Matsumoto A., Ruhl L., Bartov G., Johnson T., Vengosh A., Hsu-Kim H. Mobilization and methylation of mercury derived from coal ash holding pond effluents. 2011 Geological Society of America Annual Meeting. Minneapolis, MN. October 9-12, 2011.
20. Zhang T., Hsu-Kim H., Deshusses M.A. Biomethylation potential of mercury depends on the kinetics of HgS precipitation. 21th Annual V.M. Goldschmidt Conference Prague, Czech Republic. August 15-19, 2011.
21. Hsu-Kim H., Gondikas A.P., Masion A., Auffan M. Early-stage precipitation kinetics of cysteine-capped zinc sulfide nanoclusters. International Conference on the Environmental Implications of Nanotechnology, Durham, NC. May 9-11, 2011.
22. Hsu-Kim H., Deonarine A., Zhang T., Gondikas A., Morris A., Masion A., Auffan M. Occurrence and Stabilization of Colloidal and Nanoparticulate Mercury Sulfides. Department of Energy Subsurface Biogeochemical Research 6th Annual PI Meeting. Washington, DC. April 26-28, 2011.
23. Hagan N., Robins N., Hsu-Kim H., Morris M., Woodall G., Halabi S., Bacon A., Richter D., Vandenberg J. (2010). Legacies of mercury production and use in the Andes: The case of Huancavelica and Potosi. Society for Risk Analysis. Salt Lake City, UT. December 5-8, 2010.
24. Zhang T., Hsu-Kim H., Deshusses M.A. (2010). Microbial methylation of mercury sulfides: comparison between dissolved Hg-sulfides, nanoparticulate and bulk scale HgS. Partners in Environmental Technology Technical Symposium & Workshop. Washington, DC. November 30 – December 2, 2010.

25. Deonarine A., Hsu-Kim H., Ruhl L., Vengosh A., Bartov G., Johnson T. (2010). Methylmercury contamination of river sediments near the coal ash spill at the Kingston Fossil Plant, TN. SETAC North America 31st Annual Meeting. Portland, OR. November 7-11, 2010.
26. Zhang T., Hsu-Kim H., Deshusses M.A. (2010). Microbial methylation of mercury sulfides: comparison between dissolved Hg-sulfides, nanoparticulate and bulk scale HgS. SETAC North America 31st Annual Meeting. Portland, OR. November 7-11, 2010.
27. Deshusses M.A., Zhang T., Hsu-Kim H. (2010). Microbial methylation of mercury sulfides: comparison between dissolved Hg-sulfides, nanoparticulate and bulk scale HgS. 20th Annual V.M. Goldschmidt Conference Knoxville, TN. June 21-25, 2010.
28. Gondikas A., Deonarine A., Hsu-Kim H., Aiken G.R., Ryan J.N., Masion A., Auffan M. Growth and aggregation of ZnS nanoparticles during coprecipitation with aquatic humic substances. 20th Annual V.M. Goldschmidt Conference Knoxville, TN. June 21-25, 2010.
29. Deonarine A., Hsu-Kim H., Ruhl L., Vengosh A. (2010). Riverine mercury contamination after the 2008 coal ash spill at the Kingston Fossil Plant, TN. 20th Annual V.M. Goldschmidt Conference Knoxville, TN. June 21-25, 2010.
30. Deonarine A., Hsu-Kim H., Ruhl L., Vengosh A. (2010). Assessment of mercury and methylmercury in the Emory, Clinch and Tennessee River system after the December 2008 coal ash spill at the Kingston Fossil Plant, TN. TVA-Kingston Fly Ash Release Environmental Research Symposium, March 11-12, 2010. Harriman, TN.
31. Deonarine A., Lau B., and Hsu-Kim H. (2009). Precipitation of mercury and zinc sulfide nanoparticles in the presence of natural organic matter. ICEIN meeting, September 9-11, 2009.Washington, DC.
32. Hsu-Kim H., Polishcuk N., Bryant L., Little J.C. "Soluble Fe and Mn flux at the sediment-water interface during hypolimnetic oxygenation of a stratified water supply reservoir". Gordon Research Conference on Environmental Science: Water. June 22-27, 2008. Holderness, NH.
33. Lau, B., Deonarine A. and Hsu-Kim H. Precipitation of ZnS and HgS: The effects of organic ligands and humic substances on colloidal stability. Gordon Research Conference on Environmental Science: Water. June 22-27, 2008. Holderness, NH.
34. Deonarine, A. and Hsu-Kim, H. "Role of natural organic matter during the precipitation of nanoparticulate HgS(s) and other metal sulfides". 2008 Ocean Sciences Meeting. ASLO/AGU/TOF/ERF. March 2-7, 2008. Orlando, Florida.
35. Hsu-Kim, H., Polishchuk N., Bryant L., Little J.C. "Soluble Fe and Mn flux at the sediment-water interface during hypolimnetic oxygenation of a stratified water supply reservoir". Presented at the 235th American Chemical Society National Meeting; New Orleans, April 6-10, 2008.
36. Deonarine, A. and Hsu-Kim, H. "Assessment of Surface Water Mercury Concentrations in the Restored Upper Sandy Creek Riparian Ecosystem". Presented at the North Carolina Water Resources Research Institute Annual Meeting. Raleigh, NC, March 27-27, 2007.
37. Hsu-Kim, H. "Stabilization of aqueous zinc-sulfide nanoparticles by organic ligands". Presented at the Gordon Research Conference Environmental Sciences-Water. Plymouth, NH. June 25-30, 2006.
38. Hsu-Kim, H., T.S. Moore, A. Paschal, J. Tsang, G.W. Luther. "Zinc-sulfide speciation in hydrothermal vent fluids at the Lau Basin". Presented at the NSF Ridge 2000 Progress and Planning Workshop, Vancouver, BC. October 30 – November 1, 2005.