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

Overview of expertise and activities

Dr. Heileen (Helen) Hsu-Kim is an environmental engineer with expertise in aquatic geochemistry and nanogeoscience. Her research primarily focuses on trace elements contaminants, their distribution in the environment and exposure risks, and technologies to recover valuable metals from alternative waste sources. Current research projects include topics related to environmental mercury contamination and exposure to vulnerable populations, unintended consequences of coal ash disposal, technologies to recover rare earth elements from coal ash, and the environmental applications and implications of nanotechnology. She has published over 60 peer-reviewed journal papers, including several influential papers on environmental nanogeochemistry, mercury biogeochemistry, and coal ash geochemistry.

Dr. Hsu-Kim is currently an Associate Editor of the journal *Environmental Science: Processes & Impacts* and serves on the editorial advisory board for the journals *Environmental Science & Technology Letters* and *Coal Combustion and Gasification Products.* She is the program chair for the 2018 Gordon Research Conference on *Environmental Science: Water* in June 2018 in Holderness, NH. Dr. Hsu-Kim is also the faculty advisor for the Duke 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

Environmental Science & Technology Letters Excellence in Review Award, 2016
Research Triangle Institute University Scholar, 2016
Pratt Engineering Excellence in Teaching, 2015

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, 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 (underline denotes Hsu-Kim student/postdoc advisee)

66. Hsu-Kim, H.; Eckley, C.S.; Achá, D.; Feng, X; Gilmour, C.C.; Jonsson, S.; Mitchell, C.P.J. (2018). Challenges and Opportunities for Managing Aquatic Mercury Pollution in Altered Landscapes. *Ambio*. In press.
65. Schwartz, G.E.; Hower, J.C.; Phillips, A.L.; Rivera, N.; Vengosh, A.; Hsu-Kim H. (2018). Ranking coal ash materials for their potential to leach arsenic and selenium: The relative importance of ash chemistry and site biogeochemistry. *Environmental Engineering Science*. In press.
64. Avellan, A.; Stegemeier, J.; Gai, K; Dale, J.; Hsu-Kim, H.; Levard, C.; O'Rear, D.; Hoelen, T.; Lowry, G. (2018). Speciation of Mercury in Selected Areas of the Petroleum Value Chain. *Environ. Sci. & Technol*. In press.
63. Gerson, J.; Driscoll, C.T.; Hsu-Kim, H.; Bernhardt, E. (2018). Senegalese Artisanal Gold Mining Leads to Elevated Total Mercury and Methylmercury Concentrations in Soils, Sediments, and Water. *Elementa: Science of the Anthropocene*. In press.
62. Lefevre, E.; Bossa, N.; Gardner, C.M.; Gehrke, G.E.; Cooper, E.M.; Stapleton, H.M.; Hsu-Kim, H.; Gunsch, C.K. (2018). Biochar and activated carbon act as promising amendments for promoting the complete microbial debromination of tetrabromobisphenol A. *Water Research*. 128, 102-110. DOI: https://doi.org/10.1016/j.watres.2017.09.047
61. Wyatt, L; Ortiz, E.; Feingold, B.; Berky, A.; Diringer, S.; Morales, A.M.; Rojas, E.; Hsu-Kim, H.; Pan, W. (2017). Geospatial, Temporal, and Dietary Variables Associated with Elevated Mercury Exposure in Peruvian Riverine Communities Upstream and Downstream of Artisanal and Small-scale Gold Mining. *Intl. J. Environ. Res Public Health*. 14(12), 1582. DOI: 10.3390/ijerph14121582.
60. Weinhouse, C.; Ortiz, E.J.; Berky, A.J.; Bullins, P.; Hare-Grogg, J.; Rogers, L.; Morales, A.-M.; Hsu-Kim, H.; Pan, W.K. (2017). Hair Mercury Level is Associated with Anemia and Micronutrient Status in Children Living Near Artisanal and Small-Scale Gold Mining in the Peruvian Amazon. *American J of Tropical Medicine and Hygiene.* 97(6), 1886-1897. DOI: https://doi.org/10.4269/ajtmh.17-0269
59. Hower, J.C.; Hood, M.M.; Taggart, R.K.; Hsu-Kim, H. (2017). Chemistry and petrology of paired feed coal and combustion ash from anthracite-burning stoker boilers. *Fuel*. 199,438-446. DOI: 10.1016/j.fuel.2017.03.007
58. Hood, M. M.; Taggart, R. K.; Smith, R. C.; Hsu-Kim, H.; Henke, K. R.; Graham, U.; Groppo, J. G.; Urine, J. M.; Hower, J. C. (2017). Rare Earth Element Distribution in Fly Ash Derived from the Fire Clay Coal, Kentucky. *Coal Combustion and Gasification Products*, 9, 22-33. DOI: 10.4177/CCGP-D-17-00002.1

57. Jiang, C.; Castellon, B.T.; Matson, C.W.; Aiken, G.R.; Hsu-Kim, H. (2017). Relative contributions of copper oxide nanoparticles and dissolved copper to Cu uptake kinetics of Gulf killifish (*Fundulus grandis*) embryos. *Environ. Sci. & Technol*. 51, 1395-1404. DOI: 10.1021/acs.est.6b04672
56. Schwartz, G.E.; Redfern, L.K; Ikuma, K.; Gunsch, C.K.; Ruhl, L.S.; Vengosh, A.; Hsu-Kim, H. (2016). Impacts of coal ash on methylmercury production and the methylating microbial community in anaerobic sediment slurries. *Environ. Sci.: Processes & Impacts*. 18, 1427-1439. DOI: 10.1039/C6EM00458J
55. Taggart, R.K.; Hower, J.C.; Dwyer, G.S.; Hsu-Kim, H. (2016). Trends in the rare earth element content of U.S.-based coal combustion fly ashes. *Environ. Sci. & Technol*. 50(1), 5919-5926. DOI: 10.1021/acs.est.6b00085
54. Matson, C.W.; Bone, A.J.; Auffan, M.; Lindberg, T.T.; Arnold, M.C.; Hsu-Kim, H.; Wiesner, M.R.; Di Giulio, R.T. (2016) Silver toxicity across salinity gradients: the role of dissolved silver chloride species ($AgCl_x$) in Atlantic killifish (*Fundulus heteroclitus*) and medaka (*Oryzias latipes*) early life-stage toxicity. *Ecotoxicology*. 25(6), 1105-1118. DOI: 10.1007/s10646-016-1665-3.
53. McEwen, A.R.; Hsu-Kim, H.; Robins, N.A.; Hagan, N.A.; Halabi, S.; Barras, O.; Richter, D.; Vandenberg, J.J. (2016). Residential metal contamination and potential health risks of exposure in adobe brick houses in Potosí, Bolivia. *Sci. Total. Environ.* 562, 237-246. DOI: 10.1016/j.scitotenv.2016.03.152.
52. Gai, K.; Hoelen, T.P.; Hsu-Kim, H.; Lowry, G.V. (2016). Mobility of four common mercury species in model and natural unsaturated soils. *Environ. Sci. & Technol*. 50(7), 3342–3351. DOI: 10.1021/acs.est.5b04247.
51. Schwartz, G.E.; Rivera, N.A.; Lee, S.-W.; Harrington, J.M.; Hower, J.C.; Levine, K.E.; Vengosh, A.; Hsu-Kim, H. (2016). Leaching potential and redox transformations of arsenic and selenium in sediment microcosms with fly ash. *Applied Geochemistry*. 67, 177-185. DOI: 10.1016/j.apgeochem.2016.02.013.
50. Wyatt, L.H.; Diringer, S.E.; Rogers, L.A.; Hsu-Kim, H.; Pan, W.K.; Meyer, J.N. (2016). Antagonistic growth effects of mercury and selenium in *Caenorhabditis elegans* are chemical species-dependent and do not depend on internal Hg/Se ratios. *Environ. Sci. & Technol*. 50(6), 3256–3264. DOI:10.1021/acs.est.5b06044.
49. Lee, S.-W.; Lowry, G.V.; Hsu-Kim, H. Biogeochemical transformations of mercury in solid waste landfills and pathways for release. (2016) *Environ. Sci.: Processes & Impacts.* 18, 176-189. DOI: 10.1039/C5EM00561B.
48. Maurer, L.L.; Yang, X., Schindler, A.; Taggart, R.K., Jiang, C.; Hsu-Kim, H.; Sherwood, D.R.; Meyer, J.N. (2016). Intrallecular trafficking pathways in silver nanoparticle uptake and toxicity in *Caenorhabditis elegans*. *Nanotoxicology*. 10, 831-835. DOI: 10.3109/17435390.2015.1110759.
47. Wilcox, J.; Wang, B.; Rupp, E.; Taggart, R.; Hsu-Kim, H.; Oliveira, M.L.S.; Cutruneo, C. M.N.L.; Taffarel, S.R.; Silva, L.F.O.; Hopps, S.D.; Thomas, G.A.; Hower, J.C. (2015). Observations and assessment of fly ashes from high-sulfur bituminous coals and blends of high-sulfur bituminous and subbituminous coals: Environmental processes recorded at the macro and nanometer scale. *Energy & Fuels*. 29(11), 7168-7177. DOI: 10.1021/acs.energyfuels.5b02033

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45. Jiang, C.; Aiken, G.R.; Hsu-Kim, H. (2015). Effects of natural organic matter properties on the dissolution kinetics of zinc oxide nanoparticles. *Environ. Sci. & Technol*. 49(19), 11476-11484. DOI: 10.1021/acs.est.5b02406
44. Lauer, N.E.; Hower, J.C.; Hsu-Kim, H.; Taggart, R.K.; Vengosh, A. (2015). Naturally occurring radioactive materials in coals and coal combustion residuals in the United States. *Environ. Sci. & Technol*. 49(18), 11227-11233. DOI: 10.1021/acs.est.5b01978.
43. Kucharzyk, K.H.; Deshusses, M.A.; Porter, K.A.; Hsu-Kim, H. (2015). Relative contributions of mercury bioavailability and microbial growth rate on net methylmercury production by anaerobic mixed cultures. *Environ. Sci.: Processes & Impacts.* 17, 1568-1577. DOI: 10.1039/C5EM00174A.
42. Ticknor, J.L; Kucharzyk, K.H.; Porter, K.A.; Deshusses, M.A.; Hsu-Kim, H. (2015). Thiol-based selective extraction assay to comparatively assess bioavailable mercury in sediments. *Environ. Engr. Sci.* 32(7), 564-573. DOI: 10.1089/ees.2014.0526
41. Diringer, S.; Feingold, B; Ortiz, E.J.; Gallis, J.A.; Araújo-Flores, J.M.; Berky, A.; Pan, W.K.; Hsu-Kim, H. (2015). River transport of mercury from artisanal and small-scale gold mining and risks for dietary mercury exposure in Madre de Dios, Peru. *Environ. Sci.: Processes & Impacts.*17, 478-487. DOI: 10.1039/C4EM00567H.
40. Deonarine, A.; Hsu-Kim, H.; Zhang, T.; Cai, Y.; Richardson, C.J. (2015). Legacy source of mercury in an urban stream-wetland ecosystem in central North Carolina, USA. *Chemosphere*. 138, 960-965. DOI: 10.1016/j.chemosphere.2014.12.038.
39. Hagan, N.; Robins, N.; Hsu-Kim, H.; Halabi, S.; Espinoza Gonzales, R.D.; Ecos, E.; Richter, D.; Vandenberg, J. (2015). Mercury hair levels and factors that influence exposure for residents of Huancavelica, Peru. *Environmental Geochemistry and Health.* 37 (3), 507-514. DOI: 10.1007/s10653-014-9665-9.
38. Hagan, N.; Robins, N.; Espinoza Gonzales, R.D.; Hsu-Kim, H. (2015). Speciation and bioaccessibility mercury in adobe bricks and dirt floors in Huancavelica, Peru. *Environmental Geochemistry and Health.* 37(2), 263-272. DOI: 10.1007/s10653-014-9644-1
37. Ruhl, L.S.; Dwyer, G.; Hsu-Kim, H.; Hower, J.C.; Vengosh, A. (2014). Boron and strontium isotopic characterization of coal combustion residuals: Validation of new environmental tracers. *Environ. Sci. & Technol*. 48(24), 14790-14798. DOI: 10.1021/es503746v.
36. 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.
35. 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.
34. 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.

33. 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.
32. 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.
31. 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.
30. 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.
29. 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.
28. 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.
27. 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.
26. 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.
25. 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.
24. 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
23. 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
22. 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

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20. 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
18. 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
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16. 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.
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12. 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
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aftermath of the coal ash spill in Kingston, Tennessee. *Environ. Sci. & Technol.43*, 6323-6333. DOI: 10.1021/es900714p

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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

Media Coverage of Hsu-Kim research

Ginley, S. "Duke researchers: NC coal ash could be a resource, not just a hazard". Raleigh News & Observer. June 24, 2016. http://www.newsobserver.com/news/politics-government/article85813107.html

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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/

Research Advisees

Postdoctoral Associates:

Ryan Smith, 2016-present
Udonna Ndu, 2015-present
Nelson Rivera, 2014-present
Carol Johnson, 2014-2016
Anh Pham, 2012-2015
Gretchen Gehrke, 2012-2015
Sung-Woo Lee, 2013-2014
Kate Kucharzyk, 2011-2014
Yu-Ting Liu, 2010-2013
Amanda Morris, 2011-2012
Lee Bryant, 2010-2012
Boris Lau, 2007-2008

Graduate students:

Graduated:

Jane Cooper, M.S., 2017
Sarah Diringer, Ph.D., 2016
Chuanjia Jiang, Ph.D., 2016
Abigail McEwen, MEM, 2015
Grace Schwartz, Ph.D., 2015
Andreas Gondikas, Ph.D., 2012
Tong Zhang, Ph.D., 2012
Amrika Deonarine, Ph.D., 2011

In-Progress:
Ross Taggart, Ph.D. candidate, 2012-present
Faye Koenigsmark, Ph.D. candidate, 2015-present
Natalia Neal-Walthall, Ph.D. candidate, 2016-present
Andrew Middleton, Ph.D. candidate, 2017-present

Undergraduate:
Xiating Chen, Env Eng. major, 2016
John Hare-Grogg, Environ. Sci. major, 2015-16
Jack King, Env. Eng. major, 2015-16
Elaine Hung, REU student, summer 2015
Devon Manley, REU student, summer 2014
Osman Ulug, REU student, summer 2014
Laura Rogers, Environ. Sci. major, spring 2014 – 2015
Lauren Riedle, UNC Env. Sci. major, 2013-2014
Marika Nell, REU student, summer 2013
Zakary Goldberg, REU student, summer 2013
Karen Yu, REU student, summer 2011
Andrew Matsumoto, REU student, summer 2011
Greer Mackabee, CEE major, graduated 2012
Marianne Leonhardt, CEE major, graduated 2012
Brian Au, CEE major, graduating 2012
Patrick Canning, CEE major, graduated 2009
Natalya Polishchuk, REU student, summer 2007
Kristen Jenkins, biology major, graduated 2008

High School:
Annamarie Eustice. 2017
Kevin Jin, 2017
Hannah McGrath, 2016
Avi Aggarwaal, summer (Howard Hughes program) 2010-11
Eileen Jang, summer (Howard Hughes program) 2008-2009

Graduate Thesis Committees (* denotes Hsu-Kim advisee)
Megan O'Connor, Summer 2017, Ph.D. (CEE)
Lauren Wyatt, Summer 2017, Ph.D. (NSOE)
Jennifer Harkness, Spring 2017, Ph.D. (NSOE)

Mathieu Therezien, Fall 2016, Ph.D. (CEE)
Carley Gwin, Fall 2016, Ph.D. (CEE)
*Sarah Diringer, Fall 2016, Ph.D. (CEE)
*Chuanjia Jiang, Spring 2016, Ph.D. (CEE)
Raven Bier, Spring 2016, Ph.D. (UPE)
Andrew Schicho, Spring 2016, Ph.D. (MEMS)
*Grace Schwartz, Spring 2015, Ph.D. (CEE)
Mariah Arnold, Summer 2014, Ph.D. (NSOE)
Charles Delannoy, Spring 2014, Ph.D. (CEE)
Xinyu Yang, Spring 2014, Ph.D. (NSOE)
Lauren Barton, Spring 2014, Ph.D. (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):
* Ross Taggart (CEE)
* Faye Koenigsmark (CEE)
* Natalia Neal-Walthall (CEE)
Jackie Gerson (Ecology)
Nancy Lauer (NSOE)
Rachel Coyte (NSOE)

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

Associate Editor, *Environmental Science: Processes & Impacts*, RSC Publications. 2016-present.

Editorial Advisory Board. *Environmental Science & Technology Letters*. ACS Publications. 2014 – present.

Editorial Advisory Board. *Coal Combustion & Gasification Products*. University of Kentucky and the American Coal Ash Association. 2015 – present.

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

<u>Duke University & Pratt School of Engineering</u>

Duke University Diversity Task Force (2014-2015)

Pratt School of Engineering Faculty Council (2013-2015)

University Campus Sustainability Committee (2013-2014)

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).

<u>Scientific Community</u>

DOE, Office of Biological and Environmental Research, Science and Operations Review of the Environmental Molecular Sciences Laboratory, November 29-30, 2-17.

DOE, Office of Basic Energy Research, Basic Research Needs Workshop on the Energy-Water Nexus. January 4-5, 2017.

DOE, Office of Biological and Environmental Research, Climate and Environmental Sciencea Division, Committee of Visitors, July 19-21, 2016.

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

<u>Community/K-12 Outreach</u>

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

GAINS Conference, Faculty presenter/speaker. Durham and Chapel Hill, NC. April 3-4, 2016.

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.

Current External Grants

NIEHS Superfund Research Center. "Duke University Superfund Center Project 5: Engineering the Physico-Chemical Environment to Enhance the Bioremediation of Developmental Toxicants in Sediment". PI: Gunsch, Co-PI: Hsu-Kim, Wiesner. $ 1,096,939, 04/01/2017 – 03/31/2022.

Oak Ridge National Laboratory. "Support to Applied Field Research Initiative at Oak Ridge National Laboratory: Immobilization of Elemental Mercury in Contaminated Soils via Mercury Sulfide Formation". $131,127. 10/01/2016 – 09/30/2018.

National Institute of Environmental Health Sciences. "Impact of El Niño on Environmental Mercury and Human Exposure". PI: Pan; Co-PI: Weinhouse, Hsu-Kim, Morales. $127,000. 04/01/2016 – 03/31/2018.

National Science Foundation. "SusChEM: Collaborative Research: Coal Ash Wastes as a Resource for Critical and Strategic Elements". PI: Hsu-Kim; Co-PI: Wiesner, Hower. $299,399. 9/1/2015 – 8/31/2018.

NIEHS. "Biogeochemical Framework to Evaluate Mercury Methylation Potential During In-Situ Remediation of Contaminated Sediments". PI: Hsu-Kim; Co-PI: Deshusses, Elias. $871,339, 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 "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

Department of Energy. "Novel Membrane and Electrodeposition-Based Separation and Recovery of Rare Earth Elements from Coal Combustion Residue". PI: Hsu-Kim; Co-PI: Wiesner, Hower, Plata, Hendren. $720,100. 3/1/2016 – 8/31/2017.

RTI International. "Novel Technologies to Improve the Management of Environmental Resources in the Global Marketplace". PI: Hsu-Kim. $102,121. 1/1/2016 – 12/31/2016.

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.

Industry. "Studies in Support of South River Virginia Remedial Planning". PI: Hsu-Kim. $182,406, 1/1/2014-12/31/2016.

Industry. "Amarakaeri Health and Hydrology Impact Assessment". PI: Pan, Co-PI: Hsu-Kim, Marani, Meyer, Kumar, Stanifer, Swenson, Turner, Woods, Zhang. $1.25M. 6/15/2014 – 6/14/2016.

Alstadt Foundation. "FEMMES 2016: Females Excelling More in Math, Engineering and Science". PI: Hsu-Kim. $8,000. 7/1/2015 – 6/30/2016.

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.

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.

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.

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.

Invited Speaker at Conferences (last 4 years)

Hsu-Kim, H. Recovery of Rare Earth Elements From Coal Ash. Overseas Chinese Scholars Symposium. The 9th National Conference of Environmental Chemistry. Hangzhou, China, October 20-22, 2017.

Hsu-Kim, H. Nanoscale Metal-Organic Matter Interactions: Implications for Bioavailability and Exposure of Contaminant Metals. 12th International Conference on the Environmental Effects of Nanoparticles and Nanomaterials (ICEENN 2017), Birmingham, United Kingdom, September 3-6, 2017.

Hsu-Kim, H.; Eckley, C.S.; Achá, D.; Feng, X.; Gilmour, C.C.; Jonsson, S.; Mitchel, C.P.J. Challenges and Opportunities for Managing Aquatic Mercury Pollution in Altered Landscapes. Plenary Session for the 13th International Conference on Mercury as a Global Pollutant, Providence, Rhode Island, July 16-21, 2017.

Hsu-Kim, H; Jiang, C.; Nanoscale Metal-Organic Matter Interactions. 253rd American Chemical Society National Meeting. San Francisco, April 2-6, 2017.

Hsu-Kim, H.; Rivera, N. Reactivity and Bioavailability of Mercury Sorbed to or Coprecipitated with Iron Sulfides. 253rd American Chemical Society National Meeting. San Francisco, April 2-6, 2017.

Hsu-Kim, H;. Schwartz, G.E.; Deonarine, A.; Taggart, R.K.; Ruhl, L.S.; Vengosh, A.; Hower, J.C. Coal Ash Disposal: New Considerations for Environmental Risk Assessments. Royal Society of Chemistry International Symposium on Environmental Science. Hangzhou, June 5, 2016; Beijing, June 7, 2016.

Hsu-Kim, H; Deshusses, M.A., Elias, D. Strategies to quantify and reduce mercury bioavailability and methylation potential in the aquatic environment. American Geophysical Union Fall Meeting. San Francisco, CA. December 14-18, 2015.

Hsu-Kim, H; Deshusses, M.A., Elias, D. Quantification of mercury bioavailability and methylation potential in contaminated sediments. Geological Society of America Annual Meeting and Exposition. Baltimore, MD, November 1-4, 2015.

Hsu-Kim, H.; Taggart, R.; Hower, J.C.; Dwyer, G.S. Assessment of U.S.-based coal fly ashes as an alternative resource for rare earth elements. 250th American Chemical Society National Meeting. Boston, MA, August 16-20, 2015.

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.

Invited Seminars at Universities and Institutions (last 4 years)

Salem College, Leading Innovation: Inventing the Future with Science. "Coal Ash, Water Quality, and Reuse Opportunities". April 11, 2017.

Wake Forest University. Ecology and Evolutionary Biology. "Environmental Geochemistry of Mercury and Strategies to Monitor and Remediate Mercury Polluted Sediments". April 11, 2017.

Carnegie Mellon University, Department of Civil and Environmental Engineering. "Coal Ash Disposal: New Considerations for Environmental Risk Assessment and Waste Reuse Opportunities". September 9, 2016.

Nankai University. College of Environmental Engineering and Science. "Coal Ash Disposal: New Considerations for Environmental Risk Assessment and Waste Reuse Opportunities". June 2, 2016

Duke University. Chautauqua Lecture Series. "Coal Ash and Rare Earths: Can the fuel of the Industrial Revolution supply essential materials for today's Tech Revolution?" October 19, 2015

Duke University. Integrated Toxicology and Environmental Health Program Fall Symposium: The Toxicity of Power. "Coal Ash Disposal: New Considerations for Environmental Risk Assessments and Waste Reuse Opportunities". November 13, 2015.

University of Maryland – Baltimore County. Center for Urban Environmental Research and Education. Department of Chemical, Biochemical, and Environmental Engineering. "Disposal of Coal Ash Wastes: New Considerations for Identifying Environmental Risks". December 5, 2014.

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.

Conference symposia chaired

Program Chair, 2018 Gordon Research Conference on Environmental Science: Water. June 24-29, 2018. Holderness, New Hampshire.

"I've Got Tenure, So Now What?: Managing the Triad of Teaching, Research, and Service Post-Tenure". AEESP 2017 Research and Education Conference. Associated of Environmental Engineering and Science Professors. June 20-22, 2017. Ann Arbor, Michigan.

"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

Conference Papers (Peer-reviewed)

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 (last 4 years; presenter is underlined)

Taggart, R.K.; Smith, R.C.; Hower, J.C.; Hsu-Kim, H. Recovery of Rare Earth Elements from Coal Combustion Residuals by Leaching and Membrane-based Separations. Goldschmidt, Paris, August 13-18, 2017.

Rivera, N.; Hsu-Kim, H. *Invited:* Reactivity and Bioavailability of Mercury Sorbed to or Coprecipitated with Iron Sulfides. Goldschmidt, Paris, August 13-18, 2017.

Diringer, S.D.; Berky, A.; Marani, M.; Ortiz, E.J.; Pan, W.K.Y.; Hsu-Kim, H. Deforestation during artisanal and small-scale gold mining (ASGM) exacerbates mercury mobilization in Madre de Dios, Peru. 13th International Conference on Mercury as a Global Pollutant, Providence, Rhode Island, July 16-21, 2017.

Diringer, S.D.; River, N.; Deshusses, M.A.; Hsu-Kim, H. Sulfurized Black Carbon Sorbents for Mercury Vapor Capture in Low-Resource Settings. 13th International Conference on Mercury as a Global Pollutant, Providence, Rhode Island, July 16-21, 2017.

Reible, D.; Vrtlar, T.; Bejar, M.; Rao, B.l Bireta, P.; Schierz, A.; Ndu, U.; Hsu-Kim, H. Evaluation of mercury porewater concentration measurement approaches and their significance and biological relevance. 13th International Conference on Mercury as a Global Pollutant, Providence, Rhode Island, July 16-21, 2017.

Pan, W.; Feinfold, B. Weinhouse, C.; Ortiz, E.; Berkey, A.; Diringer, S.; Wyatt, L.; Lana, J.; Morales, A.; Rojas, E.; Meier, P.; Frischtak, H.; Rogers, L.; Hare-Grogg, J.; Meyer, J.; Hsu-Kim, H. Mercury Environmental and Human Health Risk Assessment Provides Science Base for Peru's State of Emergency in Madre de Dios. 13th International Conference on Mercury as a Global Pollutant, Providence, Rhode Island, July 16-21, 2017

Ndu, U.; Rivera, N.; Deshusses, M. Elias, D.; Christensen, G.; Hsu-Kim, H. Diffusive Gradient in Thin-Film Passive Samplers as Indicators of Mercury Bioavailability for Biomethylation

in Sediments. 13th International Conference on Mercury as a Global Pollutant, Providence, Rhode Island, July 16-21, 2017.

Rivera, N.; Bippus, P.; Hsu-Kim, H. Sorption of Mercury to Aged Iron Sulfides and the Implications for Hg Bioavailability. 13th International Conference on Mercury as a Global Pollutant, Providence, Rhode Island, July 16-21, 2017.

Koenigsmark, F.; Ortiz, E.; Berky, A.; Meier, P.; Weinhouse, C.; Pan, W.; Hsu-Kim, H. Total and Methylmercury Exposure to Communities Within and Upstream of Artisanal and Small Scale Gold Mining Areas in Madre de Dios, Peru. 13th International Conference on Mercury as a Global Pollutant, Providence, Rhode Island, July 16-21, 2017.

Hood, M.M.; Taggart, R.K.; Smith, R.C.; Hsu-Kim, H.; Groppo, J.G.; Henke, K.R.; Graham, U.M.; Hower, J.C. Rare Earth Element Distribution in Fly Ash Derived from the Fire Clay (Kentucky) Coal. 2017 World of Coal Ash. Lexington, KY. May 8-11, 2017.

Smith, R.C.; Taggart, R.K.;Hower, J.C.; Wiesner, M.; Hsu-Kim. Selective Recovery and Concentration of Rare Earth Elements from Coal Ash Leachate Using Liquid Membranes. 2017 World of Coal Ash. Lexington, KY. May 8-11, 2017.

Hendren, Z.; Choi, Y.C.; Hsu-Kim, H.; Hower, J.C.; Wiesner, M. Preliminary Techno-Economic Evaluation of a Novel Membrane Based Separation and Recovery Process for Rare Earth Elements from Coal Combustion Residues. 2017 World of Coal Ash. Lexington, KY. May 8-11, 2017.

Taggart, R.K.; King, J.F.; Hower, J.C.; Hsu-Kim. Rare Earth Element Recovery from Coal Fly Ash by Alkali Sintering and Leaching Methods. 2017 World of Coal Ash. Lexington, KY. May 8-11, 2017.

Hsu-Kim, H.; Ndu, U.; Deshusses, M.A.; Elias, D.A.; Reible, D.E. Assessing Mercury Bioavailability with Diffusive Gradient in Thin-Film Passive Samplers Part 2: Biomethylation Potential. Ninth International Conference on Remediation and Management of Contaminated Sediments. New Orleans, LA, January 9-12, 2017.

Rivera, N.; Johnson, C.; Ndu, U.; Hsu-Kim, H. Sorption of Mercury to Aged Iron Sulfides and the Implications for Hg Bioavailability. 251st American Chemical Society National Meeting. San Diego, CA, March 13-17, 2016.

Hsu-Kim, H.; Taggart, R.K.; Hower, J.C.; Dwyer, G.S. Recovery of Rare Earth Elements from Coal Fly Ash: Identification of Candidate Feedstock Materials. 251st American Chemical Society National Meeting. San Diego, CA, March 13-17, 2016.

Hsu-Kim. H.; Pham, A.L-T.; Rivera, N.; Johnson C., Ndu, U. Nanoscale Mercury Sulfide-Organic Matter Interactions: Practical Applications for Environmental Risk Assessment. 251st American Chemical Society National Meeting. San Diego, CA, March 13-17, 2016.

Johnson, C.A.; Hung, E.; Elias, D.; Deshusses, M.A.; Hsu-Kim, H. Effects of Activated Carbon Amendments on the Bioavailability and Methylation of Various Types of Inorganic Mercury. Geological Society of America Annual Meeting and Exposition. Baltimore, MD, November 1-4, 2015.

Pham, A.L.-T., Manley, D.; Johnson, C.; Hsu-Kim, H. Diffusive gradient in thin film (DGT) passive samplers for monitoring metals in contaminated sediments: Contribution of metal sulfide nanoparticles. 249th American Chemical Society National Meeting. Denver, CO, March 22-26, 2015.

Diringer, S.; Feingold, B; Ortiz, E.J.; Gallis, J.A.; Araújo-Flores, J.M.; Berky, A.; Pan, W.K.; Hsu-Kim, H. (In Press). River Transport of Mercury from Artisanal and Small-Scale Gold

Mining and Risks for Dietary Mercury Exposure in Madre de Dios, Peru. International Congress on Global Environmental Health, Lima, Peru. March 12-14, 2015.

Taggart, R.; Hower, J.C.; Dwyer, G.; Ulug, O.; Hsu-Kim, H. Comparing Extraction Methods for Rare Earth Elements in U.S. Coal Fly Ashes. 2015 World of Coal Ash Conference, Nashville, TN. May 4-7, 2015.

Hsu-Kim, H., Pham, A.L.-T.; Zhang, T.; Deshusses, M.A. Nanoscale Mercury-Sulfide-Organic Matter Interactions: Implications for Bioavailability and Methylation Potential. Synchrotron Environmental Science VI. Argonne National Laboratory, September 11-12, 2014.

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