MICHELLE M. SCHERER

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EDUCATION

1989 B.S. Systems Engineering, University of Virginia
1994 M.S. Civil and Environmental Engineering, University of Connecticut
1998 Ph.D. Environmental Science & Engineering, Oregon Graduate Institute

ACADEMIC EXPERIENCE

- Chair, Civil and Environmental Engineering (December 2010 – July 2018).
- Co-chair Inaugural Diversity, Equity, Inclusion Council UI College of Engineering (2018 – 2020).
- Co-Director Sustainable Water Development Graduate Program (Sept 2016 – Present)
- Professor (July 2010 – Present) University of Iowa, Iowa City, IA.
- Associate Professor (July 2004 – June 2010) University of Iowa, Iowa City, IA.
- Assistant Professor (August 1998 – June 2004) University of Iowa, Iowa City, IA.

EXPERTISE AND RESEARCH INTERESTS

In her research laboratory, as well in Iowa fields and homes, Professor Scherer's research group has worked to discover new ways to keep water safe by shedding light on fundamental processes in soils and, more recently, leading multiple initiatives to assess Iowans' exposure to lead (Pb) in drinking water. Her group's work is most widely known for their pioneering work on redox chemistry in soils and sediments and the implications of these reactions for contaminant fate and elemental cycling. She has published over 80 journal articles and her work has been cited more than 10,000 times. Her group's work is supported by NSF, EPA, DOE, HUD, and DOD/SERDP.

PUBLICATIONS (*n* = 81, *h*-index = 49 and over 10,000 citations)

1. Thomas C. Robinson, Drew E. Latta, Johna Leddy, and Michelle M. Scherer. **In Review.** Redox potentials of magnetite suspensions under reducing conditions. *Environ. Sci. Technology.*
2. Lara K. Bogart, Jeppe Fock, Geraldo M. da Costa, Kerstin Witte, Jean-Marc Greneche, Jan Zukrowski, Marcin Sikora, Drew E. Latta, Michelle M. Scherer, Mikkel Fougt Hansen, Cathrine Frandsen and Quentin A. Pankhurst. **2022.** Prenormative verification and validation of a protocol for measuring magnetite-maghemite ratios in magnetic nanoparticles. *Metrologia* 59(1).
3. Notini, L., M.R. Nagorzanski, and M. M. Scherer, and A. Kappler. **2021.** Looking Ahead: Student's perceptions of diversity before and after a diversity workshop. *Advances in Engineering Education.* 9(4).
4. Robinson, T., D.E. Latta, L.A. Notini, K.E. Schilling, and Michelle M. Scherer. **2021.** Abiotic reduction of nitrite by Fe(II): A comparison of rates and N_2O production. *Environ. Sci. Proc. Impact.* 23:1531. [doi.org/10.1039/d1em00222h].
5. O'Loughlin, E.J., M.I.Boyanov, C.A. Gorksi, M. M. Scherer, and K.M. Kemner. **2021**. Effects of Fe(III) mineralogy and phosphate on Fe(II) secondary mineral formation during microbial iron reduction. *Minerals.* 11(149). [doi.org/10.3390/min11020149]

6. Zhou, Z., D.E. Latta, and M.M. Scherer. **2021**. Natural organic matter inhibits Ni stabilization during Fe(II)-catalyzed ferrihydrite transformation. *Sci. Tot. Env.* 755(2): 142612. [DOI: 10.1016/j.scitotenv.2020.142612].
7. Grant, A., M.M. Scherer, D. Land, D.M. Cwiertny, M.A. Edwards, J. Mount, and D.E. Latta. **2020**. Estimating consumers at risk from drinking elevated lead concentrations: An Iowa case study *Environ. Sci. Technology: Letters.* 7(12): 948-953. [10.1021/acs.estlett.0c00753].
8. Chanda, P.; Z. Zhou, D.E. Latta, M.M. Scherer, B. Beard, and C. M. Johnson. **2020**. Effect of organic C on stable Fe isotope fractionation and isotope exchange kinetics between aqueous Fe(II) and ferrihydrite at neutral pH. 531:119344. [DOI: 10.1016/j.chemgeo.2019.119344]
9. Entwistle, J., D. E. Latta, M. M. Scherer, and A. Neumann. **2019**. Abiotic degradation of chlorinated solvents by clay minerals and Fe(II): Evidence for reactive mineral intermediates. *Environ. Sci. Technol.* 53(24): 14308-14318. [DOI: 10.1021/acs.est.9b04665].
10. Chanda, P.; Z. Zhou, D.E. Latta, M.M. Scherer, B. Beard, and C. M. Johnson, Effect of organic C on stable Fe isotope fractionation and isotope exchange kinetics between aqueous Fe(II) and ferrihydrite at neutral pH. *Chemical Geology* **2019,** *531*, 119344. [DOI: 10.1016/j.chemgeo.2019.119344].
11. Notini, L., D. E. Latta, A. Neumann, C. I. Pearce, M. Sassi, A. T. Ndiaye, K. M. Rosso, and M. M. Scherer. **2019**. A closer look at Fe(II) passivation of goethite. *ACS Earth Space Chem*. 3(12): 2717-2725. [DOI: 10.1021/acs.earthspacechem.9b00224].
12. Notini, L., J.M. Byrne, E.J. Tomaszewski, D. E. Latta, Z. Zhou, M. M. Scherer, and A. Kappler. **2019**. Mineral defects enhance bioavailability of goethite toward microbial Fe(II) reduction. *Environ. Sci. Technol.* 53(15): 8883-8891. [DOI: 10.1021/acs.est.9b03208].
13. O'Loughlin, E.J., C.A. Gorksi, T.M. Flynn, and M. M. Scherer. **2019**. Electron donor utilization of secondary mineral formation during the bioreduction of lepidocrocite by Shewanella putrefaciens CN32. *minerals.* 9(7): 434. [DOI: 10.13390/min9070434].
14. Zhou, Z., D. E. Latta, N. Noor, A. Thompson, T. Borch, and M. M. Scherer. **2018**. Fe(II)-Catalyzed Transformation of Organic Matter-Ferrihydrite Coprecipitates: A Closer Look Using Fe Isotopes. *Environ. Sci. Technol.* 52(19): 11142-11150. [DOI: 10.1021/acs.est.8b03407].
15. Notini, L., D. E. Latta, A. Neumann, C. I. Pearce, M. Sassi, A. T. Ndiaye, K. M. Rosso, and M. M. Scherer. **2018**. The role of defects in Fe(II)-goethite electron transfer. *Environ. Sci. Technol.* 52(5): 2751-2759. [DOI: 10.1021/acs.est.7b05772].
16. Culpepper, J., M. Scherer, T. Robinson, A. Neumann, D. Cwiertny, and D. Latta. **2018**. Reduction of PCE and TCE by magnetite revisited. *Environ. Sci. Proc. Impacts* 20(10): 1340-1349 [DOI: 10.1039/c8em00286j].
17. Schaefer, M. V., R. M. Handler, and M. M. Scherer. **2017**. Fe(II) reduction of pyrolusite (β-MnO_2) and secondary mineral evolution. *Geochemical Transactions* 18: 7/1-7/11. [DOI: 10.1186/s12932-017-0045-0].
18. Latta, D. E., A. Neumann, W. A. P. J. Premaratne, and M. M. Scherer. **2017**. Fe(II)-Fe(III) electron transfer in a clay mineral with low Fe content. *ACS Earth Space Chem.* 1(4): 197-208. [DOI: 10.1021/acsearthspacechem.7b00013].
19. Huhmann, B., A. Neumann, M. I. Boyanov, K. M. Kemner, and M. M. Scherer. **2017**. Emerging investigator series: As(v) in magnetite: incorporation and redistribution. *Environ. Sci. Proc. Impacts*: [DOI: 10.1039/C7EM00237H].
20. Boyanov, M. I., D. E. Latta, M. M. Scherer, E. J. O'Loughlin, and K. M. Kemner. **2017**. Surface area effects on the reduction of UVI in the presence of synthetic montmorillonite. *Chem. Geol.* 464: 110-117. [DOI: 10.1016/j.chemgeo.2016.12.016].
21. Frierdich, A.J., Spicuzza, M.J, Scherer, M.M. Oxygen isotope evidence for Mn(II)-catalyzed Recrystallization of Manganite (γ-MnOOH). *Environ Sci Technol* **2016**, *50,* 6374-6380. [DOI: 10.1021/acs.est.6b01463].
22. Frierdich, A. J.; Beard, B. L.; Rosso, K.M.; Scherer, M. M.; Spicuzza, M.J.; Valley, J.W.,Johnson, C. M., Low temperature, non-stoichiometric oxygen-isotope exchange coupled to Fe(II)-goethite interactions. *Geochim. Cosmochim. Acta* **2015,** *160*, 38-54.
23. Anke Neumann, A., Lingling Wu, Weiqiang Li, Brian Beard, Clark M. Johnson, Kevin M. Rosso,

Andrew Frierdich, and Michelle M. Scherer. Atom Exchange between Aqueous Fe(II) and Structural Fe in Clay Minerals. *Environ Sci Technol* **2015**, 49(5), p. 2786-2795. [DOI. 10.1021/es504984q].

24. Timothy Pasakarnis, Michael McCormick, Gene Parkin, Aaron Thompson, Michelle Scherer, Fe(II)aq - Fe(III)oxide electron transfer and mixing: Effect of organic carbon. *Environmental Chemistry*. **2015.** *12(1)*, 52-63. [DOI: 10.1071/EN14035].
25. Viktor Tishchenko, Christof Meile, Michelle Scherer, Tim Pasakarnis, Aaron Thompson, Fe^{2+}-catalyzed iron atom exchange and re-crystallization in a tropical soil. *Geochim Cosmochim Acta* **2015**, 191-202. [DOI: 10.1016/j.gca.2014.09.018].
26. Latta, D.E., Boyanov, M.I., O'Loughlin, E.J., Kemner, K.M., Scherer, M.M. Reaction of uranium(VI) with green rusts: Effect of interlayer anion. *Current Inorganic Chemistry*. **2015**, 5, 156-168.
27. Frierdich, A.J., Helgeson, M., Liu C., Wang, C., Rosso K.M., Scherer M.M. Iron atom exchange between hematite and aqueous Fe(II). *Environ Sci Technol* **2015**, *14,* 8479-8486. [DOI. 10.1021/acs.est.5b012].
28. Robert M. Handler, Andrew Frierdich, Clark M. Johnson, Kevin M. Rosso, Brian L. Beard, Chongmin Wang, Drew E. Latta, Anke Neumann, Timothy Pasakarnis, W.A.P.J. Premaratne, Michelle M. Scherer, Fe(II)-catalyzed recrystallization of goethite revisited. *Environ Sci Technol* **2014**, 48, 11302−11311. [DOI: 10.1021/es503084u].
29. Frierdich, A. J.; Beard, B. L.; Reddy, T. R.; Scherer, M. M.; Johnson, C. M., Iron isotopic fractionation between aqueous Fe(II) and goethite revisited: New insights based on a multi-direction approach to equilibrium and isotopic exchange rate modification. *Geochim. Cosmochim. Acta* **2014,** *139*, 383-398.
30. Frierdich, A. J.; Beard, B. L.; Scherer, M. M.; Johnson, C. M., Determination of the $Fe(II)_{aq}$-magnetite equilibrium iron isotope fractionation factor using the three-isotope method and a multi-direction approach to equilibrium *Earth Planet. Sc. Lett.* **2014**, (391), 77-86.
31. Timothy S. Pasakarnis, Maxim I. Boyanov, Kenneth M. Kemner, Bhoopesh Mishra, Edward J. O'Loughlin, Gene Parkin, and Michelle M. Scherer. Influence of Chloride and Fe(II) Content on the Reduction of Hg(II) by Magnetite *Environ. Sci. Technol.*, **2013**, *47* (13), pp 6987–6994. DOI: 10.1021/es304761. *Tribute Issue for Rene Scharzenbach.*
32. Anke Neumann, Tyler L. Olson, and Michelle M. Scherer. Spectroscopic Evidence for Fe(II)–Fe(III) Electron Transfer at Clay Mineral Edge and Basal Sites. *Environ. Sci. Technol.*, **2013**, *47* (13), pp 6969–6977. DOI: 10.1021/es304744v. *Tribute Issue for Rene Scharzenbach.*
33. Vitaly Alexandrov, Anke Neumann, Michelle M. Scherer, and Kevin M. Rosso. Electron Exchange and Conduction in Nontronite from First-Principles *J. Phys. Chem. C*, **2013**, *117* (5), pp 2032–2040 DOI: 10.1021/jp3110776.
34. Edward J. O'Loughlin, Maxim I. Boyanov, Theodore M. Flynn, Christopher A. Gorski, Scott M. Hofmann, Michael L. McCormick, Michelle M. Scherer, and Kenneth M. Kemner. Effects of Bound Phosphate on the Bioreduction of Lepidocrocite (γ-FeOOH) and Maghemite (γ-Fe2O3) and Formation of Secondary Minerals. *Environ. Sci. Technol.*, **2013**, *47* pp 9157–9166 DOI**:** 10.1021/es400627j.
35. Gorski, C., D. E. Latta, and M. M. Scherer (**2012**), Influence of Fe^{2+} catalyzed Fe oxide recrystallization on metal cycling: A brief review, *Biochemical Society Transactions*, *40*(6), 1191-1197.
36. Latta, D. E., J. E. Bachman, and M. M. Scherer (**2012**), Fe Electron Transfer and Atom Exchange in Goethite: Influence of Al-Substitution and Anion Sorption, *Environmental Science & Technology*, *46*(19), 10614-10623.
37. Rubasinghege, G., P. K. Kyei, M. M. Scherer, and V. H. Grassian (**2012**), Proton-promoted dissolution of alpha-FeOOH nanorods and microrods: Size dependence, anion effects (carbonate and phosphate), aggregation and surface adsorption, *Journal of Colloid and Interface Science*, *385*, 15-23.
38. Frierdich, A. J., M. M. Scherer, J. E. Bachman, M. H. Engelhard, B. W. Rapponotti, and J. G. Catalano (**2012**), Inhibition of Trace Element Release During Fe(II)-Activated Recrystallization of Al-, Cr-, and Sn-Substituted Goethite and Hematite, *Environmental Science & Technology*, *46*(18), 10031-10039.
39. Gorski, C. A., R. M. Handler, B. L. Beard, T. Pasakarnis, C. M. Johnson, and M. M. Scherer (**2012**), Fe Atom Exchange between Aqueous Fe^{2+} and Magnetite, *Environmental Science & Technology*, *46*(20), 12399-12407.

40. Latta, D. E., M. I. Boyanov, K. M. Kemner, E. J. O'Loughlin, and M. M. Scherer (**2012**), Abiotic reduction of uranium by Fe(II) in soil, *Applied Geochemistry*, *27*(8), 1512-1524.
41. Chen, H., A. Laskin, J. Baltrusaitis, C. A. Gorski, M. M. Scherer, and V. H. Grassian (**2012**), Coal Fly Ash as a Source of Iron in Atmospheric Dust, *Environmental Science & Technology*, *46*(4), 2112-2120.
42. Latta, D. E., C. A. Gorski, M. I. Boyanov, E. J. O'Loughlin, K. M. Kemner, and M. M. Scherer (**2012**), Influence of Magnetite Stoichiometry on U-VI Reduction, *Environmental Science & Technology*, *46*(2), 778-786.
43. Schaefer, M. V.; Gorski, C. A.; Scherer, M. M. Spectroscopic evidence for interfacial Fe(II)-Fe(III) electron transfer in a clay mineral. *Environ. Sci. & Technol.* **2011**, *45*, (2), 540-545, DOI: 10.1021/es102560m.
44. Larese-Casanova, P.; Cwiertny, D.M.; Scherer M.M. Nanogoethite formation from oxidation of Fe(II) sorbed on aluminum oxide: implications for contaminant fate. *Environ. Sci. & Technol.* **2010.** *44*, (10), 3765-3771, DOI: 10.1021/es903171y.
45. Fu, H.; Cwiertny, D. M.; Carmichael, G. R.; Scherer, M. M.; Grassian, V. H. Photoreductive dissolution of Fe-containing mineral dust particles in acidic media. *J. Geophys. Res., [Atmos.].* **2010***, D11304*, DOI: 10.1029/2009JD012702.
46. Rubasinghege, G.; Lentz, R.W.; Scherer, M. M.; Grassian, V.H. Simulated atmospheric processing of iron oxyhydroxide minerals at low pH: Roles of particle size and acid anion in iron dissolution. *Proc. Natl. Acad. Sci. U.S.A.* **2010**. *107*, (15), 6628-6633, DOI: 10.1073/pnas.0910809107.
47. Beard, B. L.; Handler, R.; Scherer, M .M.; Wu, L.; Czaja, A. D.; Heimann, A; Johnson, C. M. Iron isotope fractionation between aqueous ferrous iron and goethite. *Earth Planet. Sci. Lett*. **2010***, 295*, (1-2), 241-250, DOI: 10.1016/j.epsl.2010.04.006.
48. Gorski, C. A.; Nurmi, J. T.; Tratnyek, P. G.; Hofstetter, T. B.; Scherer, M. M. Redox behavior of magnetite: Implications for contaminant reduction. *Environ. Sci. Technol.* **2010**, *44*, (1), 55-60, DOI: 10.1021/es9016848.
49. Rosso, K. M.; Yanina, S. V.; Gorski, C. A.; Larese-Casanova, P.; Scherer, M. M. Connecting observations of hematite (□-Fe_2O_3) growth catalyzed by Fe(II). *Environ. Sci. Technol.* **2010**, *44*, (1), 61-67, DOI: 10.1021/es901882a.
50. Rubasinghege, G.; Lentz, R.; Park, H.; Scherer, M. M.; Grassian, V. H. Nanorod dissolution quenched in the aggregated state. *Langmuir.* **2010***,* 26(3):1524-1527, DOI: 10.1021/la903950e.
51. O'Loughlin, E.; Gorski, C.; Scherer, M. M.; Boyanov, M.; Kemner, K. Effects of oxyanions, natural organic matter, and bacterial cell numbers on the bioreduction of lepidocrocite (γ-FeOOH) and the formation of secondary mineralization products. *Environ. Sci. & Technol.* **2010,** *44*, (12), 4570-4576, DOI: 10.1021/es100294w.
52. Gorski, C. A. and Scherer, M. M. Determination of nanoparticulate magnetite stoichiometry by Mössbauer spectroscopy, acidic dissolution, and powder X-ray diffraction: A critical review. *Am. Mineral*. **2010**, *95*, 1017-1026, DOI: 10.2138/am.2010.3435.
53. Handler, R. M.; Beard, B. L.; Johnson, C. M.; Scherer, M. M. Atom exchange between aqueous Fe(II) and goethite: An Fe isotope tracer study. *Environ. Sci. Technol.* **2009,** *43* (4), 1102–1107, DOI: 10.1021/es802402m.
54. Gorski, C. A.; Scherer, M. M. Influence of magnetite stoichiometry on Fe(II) uptake and nitrobenzene reduction. *Environ. Sci. Technol.* **2009,** *43*, (10), 3675-3680, DOI: 10.1021/es803613a.
55. Cwiertny, D. M.; Hunter, G. J.; Pettibone, J. M.; Scherer, M. M.; Grassian, V. H. Surface chemistry and dissolution of alpha-FeOOH nanorods and microrods: Environmental implications of size-dependent interactions with oxalate. *J. Phys. Chem. C* **2009,** *113*, (6), 2175-2186, DOI: 10.1021/jp807336t.
56. Pettibone, J. M.; Cwiertny, D. M.; Scherer, M.; Grassian, V. H. Adsorption of organic acids on TiO_2 nanoparticles: Effects of pH, nanoparticle size, and nanoparticle aggregation. *Langmuir* **2008,** *24*, (13), 6659-6667, DOI: 10.1021/la7039916.
57. Larese-Casanova, P.; Scherer, M. M. Abiotic transformation of hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX) by green rusts. *Environ. Sci. Technol.* **2008,** *42*, (11), 3975-3981.

58. Cwiertny, D. M.; Handler, R. M.; Schaefer, M. V.; Grassian, V. H.; Scherer, M. M. Interpreting nanoscale size-effects in aggregated Fe-oxide suspensions: reaction of Fe(II) with goethite. *Geochim. Cosmochim. Acta* **2008,** *72*, (5), 1365-1380.
59. Cwiertny, D. M.; Baltrusaitis, J.; Hunter, G. J.; Laskin, A.; Scherer, M. M.; Grassian, V. H. Characterization and acid-mobilization study of iron-containing mineral dust source materials. *J. Geophys. Res., [Atmos.]* **2008,** *113*, (D5).
60. O'Loughlin, E. J.; Larese-Casanova, P.; Scherer, M.; Cook, R. Green rust formation from the bioreduction of γ-FeOOH (lepidocrocite): Comparison of several *Shewanella* species. *Geomicrobiology Journal* **2007,** *24*, (3-4), 211-230.
61. Larese-Casanova, P.; Scherer, M. M. Fe(II) sorption on hematite: New insights based on spectroscopic measurements. *Environ. Sci. Technol.* **2007,** *41*, (2), 471-477.
62. Larese-Casanova, P.; Scherer, M. M. Morin transition suppression in Polycrystalline (57)Hematite (alpha-Fe2O3) exposed to Fe-56(II). *Hyperfine Interact.* **2007,** *174*, 111-119.
63. Williams, A. G. B.; Gregory, K. B.; Parkin, G. F.; Scherer, M. M. Hexahydro-1,3,5-trinitro-1,3,5-triazine transformation by biologically reduced ferrihydrite: Evolution of Fe mineralogy, surface area, and reaction rates. *Environ. Sci. Technol.* **2005,** *39*, (14), 5183-5189.
64. Shrout, J. D.; Williams, A. G. B.; Scherer, M. M.; Parkin, G. F. Inhibition of bacterial perchlorate reduction by zero-valent iron. *Biodegradation* **2005,** *16*, (1), 23-32.
65. Shrout, J. D.; Larese-Casanova, P.; Scherer, M. M.; Alvarez, P. J. Sustained and complete hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX) degradation in zero-valent iron simulated barriers under different microbial conditions. *Environmental Technology* **2005,** *26*, 1115-1126.
66. Williams, A. G. B.; Scherer, M. M. Spectroscopic evidence for Fe(II)-Fe(III) electron transfer at the Fe oxide-water interface. *Environ. Sci. Technol.* **2004,** *38*, (18), 4782-4790.
67. Miehr, R.; Tratnyek, P. G.; Bandstra, J. Z.; Scherer, M. M.; Alowitz, M.; Bylaska, E. J. The diversity of contaminant reduction reactions by zero-valent iron: Role of the reductate. *Environ. Sci. & Technol.* **2004,** *38*, 139-147.
68. Gregory, K. B.; Larese-Casanova, P.; Parkin, G. F.; Scherer, M. M. Abiotic transformation of hexahydro-1,3,5-trinitro-1,3,5-triazine by Fe^{II} bound to magnetite. *Environ. Sci. Technol.* **2004,** *38*, (5), 1408-1414.
69. Ginner, J. L.; Alvarez, P. J. J.; Smith, S. L.; Scherer, M. M. Nitrate and nitrite reduction by Fe(0): Influence of mass transport, temperature, and denitrifying microbes. *Environmental Engineering Science* **2004,** *21*, (2), 219-229.
70. Gander, J. W.; Parkin, G. F.; Scherer, M. M. Kinetics of 1,1,1-Trichlorethane transformations by iron sulfide and a methanogenic consortia. *Environ. Sci. & Technol.* **2002,** *36*, (21), 4540-4546.
71. Alowitz, M. J.; Scherer, M. M. Kinetics of nitrate, nitrite, and Cr(VI) reduction by iron metal. *Environ. Sci. Technol.* **2002,** *36*, 299-306.
72. Williams, A. G. B.; Scherer, M. M. Kinetics of Cr(VI) reduction by carbonate green rust. *Environ. Sci. Technol.* **2001,** *35*, (17), 3488-3494.
73. Tratnyek, P. G.; Scherer, M. M.; Deng, B.; Hu, S. Effects of natural organic matter, anthropogenic surfactants, and model quinones on the reduction of contaminants by zero-valent iron. *Water Research* **2001,** *35*, (18), 4435-4443.
74. Tratnyek, P. G.; Reilkoff, T. E.; Scherer, M. M.; Balko, B. A.; Feik, L. M.; Henegar, B. Visualizing redox chemistry: Probing environmental oxidation-reduction reactions with indicator dyes. *The Chemical Educator* **2001,** *6*, (3), 172-179.
75. Scherer, M. M.; Johnson, K. M.; Westall, J. C.; Tratnyek, P. G. Mass transport effects on the kinetics of nitrobenzene reduction by iron metal. *Environ. Sci. & Technol.* **2001,** *35*, (13), 2804-2811.
76. Scherer, M. M.; Richter, S.; Valentine, R. L.; Alvarez, P. J. J. Chemistry and microbiology of permeable reactive barriers for in situ groundwater clean up. *Critical Reviews in Environ. Sci. Technol.* **2000,** *30*, (3), 363-411.
77. Scherer, M. M.; Balko, B., A.; Gallagher, D. A.; Tratnyek, P. G. Correlation analysis of rate constants for dechlorination by zero-valent iron. *Environ. Sci. & Technol.* **1998,** *32*, 3026-3033.
78. Tratnyek, P. G.; Johnson, T. L.; Scherer, M. M.; Eykholt, G. R. Remediating groundwater with zero-

valent metals: Kinetic considerations in barrier design. *Ground Water Monitoring and Remediation* **1997**, (Fall), 108-114.

79. Scherer, M. M.; Westall, J. C.; Ziomek-Moroz, M.; Tratnyek, P. G. Kinetics of carbon tetrachloride reduction at an oxide-free iron electrode. *Environ. Sci. Technol.* **1997,** *31*, (8), 2385-2391.
80. Johnson, T. L.; Scherer, M. M.; Tratnyek, P. G. Kinetics of halogenated organic compound degradation by iron metal. *Environ. Sci. Technol.* **1996,** *30*, (8), 2634-2640.
81. Nikolaidis, N. P.; Robbins, G. A.; Scherer, M.; McAninch, B.; Binkhorst, G.; Asikainen, J.; Suib, S. L. Vertical distribution and partitioning of chromium in a glaciofluvial aquifer. *Ground Water Monitoring and Remediation* **1994,** *Summer*, 150-159.

AWARDS AND HONORS

- University of Iowa Distinguished Chair and Professor (2021 - Present)
- Iowa Regents Award for Faculty Excellence (2021)
- Numerous keynote/invited talks, including RemTec (2019), Battelle Symposium (2019), Goldschmidt (2018), ACS (2018). Keynote lecture at ACS National Meeting "Women Leaders in Environmental Chemistry" (2014).
- SERDP Cleanup Project of the Year Award (2018)
- The May Brodbeck Distinguished Achievement Award for Faculty (2016)
- Recognized by CEE graduating class for excellence in teaching and dedication to student success (2015)
- Malcolm Pirnie/AEESP Frontier in Research Award (2010)
- Robert and Virginia Wheeler Faculty Fellowship in Engineering (2010)
- AEESP Distinguished Service Award (2009)
- University of Iowa College of Engineering Faculty Excellence Award for Research (2008)
- University of Iowa Faculty Scholar Award (2006-2009)
- University of Iowa Obermann Scholar (2006)
- *Environmental Science & Technology* Reviewer Award (2004)
- Co-PI on SERDP Cleanup Project of the Year (2002)
- National Science Foundation CAREER Awardee (2000)

PROFESSIONAL SERVICE

- Member of Strategic Environmental Research and Development Program (SERDP) Science Advisory Board (2016 –2017) (SERDP is DoD's Environmental Research Program)
- Member of EPA's Environmental Engineering Scientific Advisory Board (2014 –2018)
- Associate Editor, *Environmental Science & Technology* (2008 – 2012).
- Chair, Association of Environmental Engineering and Science Professors (AEESP) Bi-Annual National Conference 2009
- Founder of Telluride Workshop on Fe Biogeochemistry (Chair or Co-Chair 2006, 2014, 2018)

MAJOR EXTERNAL FUNDING (current)

- National Science Foundation Research Traineeship (NRT) Program. *NRT-INFEWS: Paths to sustainable food-energy-water systems in resource-limited communities.* **$2,999,263**. Co-PI and Co-Director. 09/01/2016 – 09/31/2022.
- US Department of Housing and Urban Development. Office of Lead Hazard and healthy homes. *Healthy homes need healthy water: Developing and implementing a lead in drinking water assessment tool.* **$773,257**. Co-PI and Co-Director. 03/01/2022 – 03/01/2025.

- US Department of Defense, Strategic Environmental Research and Development Program (SERDP); *Developing a Quantitative Framework for Predicting Abiotic Attenuation under Natural and Transitional Site Management Scenarios.* **$464,624.** PI. 09/01/2019 – 08/31/2023.
- US Department of Energy, Pacific Northwest National Laboratory; Fundamental Mechanisms of Reactivity at Complex Geochemical Interfaces. **$283,200**. Co-PI. 01/13/2022 – 09/30/2024.

MAJOR (> 200k) EXTERNAL FUNDING (past)

- National Science Foundation: Nanoscale Interdisciplinary Research Team: Nanoparticle Fe as a Reactive Constituent in Air, Water, and Soil. NSF# 0506679; **$1,400,000**. PI.
- Department of Energy: Electron and Atom Exchange Between Aqueous Fe(II) and Structural Fe(III) in Clays: Role in U and Hg(II) Transformations. **$1,036,630**. PI.
- National Science Foundation: MRI: Acquisition of an Electron Microprobe (EMP) for analysis of inorganic elemental concentrations in solid-state materials: Expanding science research and teaching in Iowa. NSF# 1123978; **$987,742**. Co-PI. (PI: I. Peate)
- US Department of Defense, Strategic Environmental Research and Development Program (SERDP); *Biologically Mediated Abiotic Degradation of Chlorinated Ethenes: A New Conceptual Framework*; Sponsor # W912HQ-15-C-0019; **$643,339**. PI.
- National Science Foundation. Linking molecular scale surface speciation to interfacial Fe redox chemistry. NSF # 1012037; **$579,729**. PI.
- National Science Foundation: Acquisition of a Multi-User XPS System to Investigate Materials and Environmental Chemistry. NSF# 0320387; **$560,000**. Co-PI. (PI: Grassian)
- National Science Foundation: MRI: Acquisition of a Laser Ablation ICP-MS Facility for Geoscience and Environmental Engineering and Sciences Research and Teaching in Iowa. NSF# 0821615; **$330,000**. Co-PI. (PI: Peate)
- National Science Foundation. *Collaborative Research: Environmental Electron Doping of Iron Oxide Nanoparticles: Influence on Particle Properties and Reactivity*. NSF # 1012037; **$298,906.** PI.
- National Science Foundation. *Collaborative Research: Stable isotope investigation of Fe oxide reactivity and natural isotope fractionation*. NSF # 1708467; **$259,844**. PI.
- Department of Energy/Argonne National Laboratory. Coupled microbial, geochemical, and mineralogical controls on biogenic Fe(II) speciation and reactivity. **$251,000**. PI.
- Department of Energy: *Electron and Atom Exchange Dynamics at the Aqueous Fe(II)/Fe(III)-(Oxyhydr)oxide Interface,* **$213,200.** PI.
- US Department of Energy, Pacific Northwest National Laboratory; *Molecular Mechanisms of Interfacial Reactivity in Near Surface and Extreme Geochemical Environments*; **$210,000**. PI.
- National Science Foundation. *SusChEM: Collaborative Research: Influence of Fe2+- catalyzed recrystallization on Fe oxide reactivity and C stabilization.* **$203,592**. PI.

GRADUATE STUDENT MENTORING

Professor Scherer has successfully mentored numerous graduate students (> 25) and many have gone on to successful careers in academics, public service, and industry. Her Ph.D. students are sought after for postdoctoral students positions at prestigious academic institutions such as EAWAG and ETH in Switzerland, U. of Tuebingen in Germany, Yale, and Stanford. Several students are tenured or tenure-track faculty at top-ranked universities including Penn State, Northeastern, Carnegie Mellon, Monash University, and Newcastle University. Her students have been recognized with numerous fellowships and awards including several NSF GRFP and EPA ORISE fellowships. In addition to academic positions, her students are engineers and leaders in the water treatment industry throughout the U.S. Professor Scherer considers it a privilege to have been part of their lives and helped them in whatever she could on their own quests to create a more sustainable future for all.