

References

- Acharyya, S. K. (2002). "Arsenic contamination in groundwater affecting major parts of southern West Bengal and parts of western Chhattisgarh: Source and mobilization processes." Current Science **82**(6): 740-744.
- Afonso, M. D. S., P. J. Morando, M. A. Blesa, S. Banwart and W. Stumm (1990). "The reductive dissolution of iron oxides by ascorbate." Journal of Colloid and Interface Science **138**(1): 74-82.
- Aggett, J. and G. A. O'Brien (1985). "Detailed Model for the Mobility of Arsenic in the Lacustrine Sediments Based on Measurements in Lake Ohakuri." Environmental Science and Technology **19**(3): 231-238.
- Ahmann, D., L. R. Krumholz, H. F. Hemond, D. R. Lovley and F. M. Morel (1997). "Microbial Mobilization of Arsenic from Sediments of the Aberjona Watershed." Environmental Science and Technology **31**(10): 2923-2930.
- Akai, J., K. Izumi, H. Fukuhara, H. Masuda, S. Nakano, T. Yoshimura, H. Ohfuji, H. M. Anawar and K. Akai (2004). "Mineralogical and geomicrobiological investigations on groundwater arsenic enrichment in Bangladesh." Applied Geochemistry **19**: 215-230.
- Amirbahman, A., D. Kent, G. Curtis and J. Davis (2006). "Kinetics of abiotic arsenic(III) oxidation by aquifer materials." Geochimica et Cosmochimica Acta *in press*.
- Anawar, H. M., J. Akai and H. Sakugawa (2004). "Mobilization of arsenic from subsurface sediments by effect of bicarbonate ions in groundwater." Chemosphere **54**: 753-762.
- Anderson, L. C. and K. W. Bruland (1991). "Biogeochemistry of arsenic in natural waters: The importance of Methylated Species." Environmental Science and Technology **25**: 420-424.
- Antelo, J., M. Avena, S. Fiol, R. Lopez and F. Arce (2005). "Effects of pH and ionic strength on the adsorption of phosphate and arsenate at the goethite-water interface." Journal of Colloid and Interface Science **285**: 476-486.
- Appelo, C. A. J., M. J. J. Van der Weiden, C. Tournassat and L. Charlet (2002). "Surface Complexation of Ferrous Iron and Carbonate on Ferrihydrite and the Mobilization of Arsenic." Environmental Science and Technology **36**(14): 3096-3103.

- Arai, Y., D. L. Sparks and J. A. Davis (2004). "Effects of Dissolved Carbonate on Arsenate Adsorption and Surface Speciation at the Hematite-Water Interface." environmental Science and Technology **38**: 817-824.
- Azcue, J. M. and J. O. Nriagu (1994). "Role of sediment porewater in the cycling of arsenic in a mine-polluted lake." Environment International **20**(4): 517-527.
- Baltpurvins, K. A., R. C. Burns and G. A. Lawrance (1996). "Effect of pH and Anion Type on the Aging of Freshly Precipitated Iron(III) Hydroxide Sludges." Environmental Science and Technology **30**: 939-944.
- Bargar, J. R., J. D. Kubicki, R. Reitmeyer and J. A. Davis (2005). "ATR-FTIR spectroscopic characterization of coexisting carbonate surface complexes on hematite." Geochimica et Cosmochimica Acta **69**(6): 1527-1542.
- Bauer, M. and C. Blodau (2006). "Mobilization of arsenic by dissolved organic matter from iron oxides, soils, and sediments." The Science of the Total Environment **354**: 179-190.
- Benner, S. C., C. M. Hansel, B. W. Wielinga, T. M. Barber and S. Fendorf (2002). "Reductive dissolution and biomineralization of iron hydroxide under dynamic flow conditions." Environmental Science and Technology **36**(8): 1705-1711.
- Bhattacharyya, R., D. Chatterjee, B. Nath, J. Jana, G. Jacks and M. Vahter (2003). "High arsenic groundwater: Mobilization, metabolism, and mitigation - an overview in the Bengal Delta Plain." Molecular and Cellular Biochemistry **253**: 347-355.
- Biber, M. V., M. d. S. Afonso and W. Stumm (1994). "The coordination chemistry of weathering: IV. Inhibition of the dissolution of oxide minerals." Geochimica et Cosmochimica Acta **58**(9): 1999-2010.
- Bocher, F., A. Gehin, C. Ruby, J. Ghanbaja, M. Abdelmoula and J.-M. R. Genin (2004). "Coprecipitation of Fe(II-III) hydroxycarbonate green rust stabilized by phosphate adsorption." Solid State Sciences **6**(1): 117-124.
- Bondietti, G., J. Sinniger and W. Stumm (1993). "The reactivity of Fe(III) (hydr)oxides: effects of ligands in inhibiting the dissolution." Colloids and Surfaces A: Physicochemical and Engineering Aspects **79**: 157-167.
- Bonneville, S., P. V. Cappellen and T. Behrends (2004). "Microbial reduction of iron(III) oxyhydroxides: effects of mineral solubility and availability." Chemical Geology **212**: 255-268.
- Bose, P. and A. Sharma (2002). "Role of iron in controlling speciation and mobilization of arsenic in subsurface environment." Water Research **36**: 4916-4926.

- Bowell, R. J. (1994). "Sorption of arsenic by iron oxides and oxyhydroxides in soils." Applied Geochemistry **9**: 279-268.
- Brown, G. E., G. Calas, G. A. Waychunas and J. Petiau (1988). X-ray absorption spectroscopy: Applications in mineralogy and geochemistry. Spectroscopic Methods in Mineralogy and Geology. F. C. Hawthorne. Washington, DC, Mineralogical Society of America. **18**: 431-512.
- Buschmann, J., A. Kappeler, U. Lindauer, D. Kistler, M. Berg and L. Sigg (2006). "Arsenite and Arsenate Binding to Dissolved Humic Acids: Influence of pH, Type of Humic Acid, and Aluminum." Environmental Science and Technology **40**(19): 6015-6020.
- Campbell, K. M., D. Malasarn, C. W. Saltikov, D. K. Newman and J. G. Hering (2006). "Simultaneous Microbial Reduction of Iron(III) and Arsenic(V) in Suspensions of Hydrated Ferric Oxide." Environmental Science and Technology **40**(19): 5950 - 5955.
- Cervantes, C., G. Ji, J. L. Ramirez and S. Silver (1994). "Resistance to arsenic compounds in microorganisms." FEMS Microbiology Reviews **15**: 355-367.
- Chiu, V. Q. and J. G. Hering (2000). "Arsenic Adsorption and Oxidation at Manganite Surfaces. 1. Method for Simultaneous Determination of Adsorbed and Dissolved Arsenic Species." Environmental Science and Technology **34**(10): 2029-2034.
- Cooper, D. C., A. L. Neal, R. K. Kukkadapu, D. Brewe, A. Coby and F. W. Picardal (2005). "Effects of sediment iron mineral composition on microbially mediated changes in divalent metal speciation: Importance of ferrihydrite." Geochimica et Cosmochimica Acta **69**(7): 1739-1754.
- Cornell, R. M. and U. Schwertmann (1996). The Iron Oxides: Structure, Properties, Reactions, Occurrence and Uses. Weinheim, VCH.
- Cullen, W. R. and K. J. Reimer (1989). "Arsenic Speciation in the Environment." Chemical Reviews **89**: 713-764.
- Cummings, D. E., A. W. March, B. Bostick, S. Spring, J. Frank Caccavo, S. Fendorf and R. F. Rosenzweig (2000). "Evidence for Microbial Fe(III) Reduction in Anoxic, Mining-Impacted Lake Sediments (Lake Coeur d'Alene, Idaho)." Applied and Environmental Microbiology **66**(1): 154-162.
- Davison, W., G. W. Grime, J. A. W. Morgan and K. Clarke (1991). "Distribution of dissolved iron in sediment pore waters at submillimetre resolution." Nature **352**: 323-324.

- Davison, W., H. Zhang and G. W. Grime (1994). "Performance Characteristics of Gel Probes Used for Measuring the Chemistry of Pore Waters." Environmental Science and Technology **28**(9): 1623-1632.
- Dixit, S. and J. G. Hering (2003). "Comparison of Arsenic(V) and Arsenic(III) Sorption onto Iron Oxide Minerals: Implications for Arsenic Mobility." Environmental Science and Technology **37**(18): 4182-4189.
- Docekalova, H., O. Clarisse, S. Salomon and M. Wartel (2002). "Use of constrained DET probe for a high-resolution determination of metals and anions distribution in the sediment pore water." Talanta **57**: 145-155.
- Dowdle, P. R., A. M. Laverman and R. S. Oremland (1996). "Bacterial Dissimilatory Reduction of Arsenic(V) to Arsenic(III) in Anoxic Sediments." Applied and Environmental Microbiology **62**(5): 1664-1669.
- Dzombak, D. A. and F. M. M. Morel (1990). Surface Complexation Modeling: Hydrous Ferric Oxide. New York, John Wiley & Sons.
- Edenborn, H. M., and L.A. Brickett (2002). "Determination of Manganese Stability in a Constructed Wetland Sediment Using Redox Gel Probes." Geomicrobiology Journal **19**: 485-504.
- Edenborn, H. M. and L. A. Brickett (2002). "Determination of Trace Element Stability in Sediments Using Redox Gel Probes: Probe Construction and Theoretical Performance." Geomicrobiology Journal **19**: 465-483.
- Eggleton, R. A. and R. W. Fitzpatrick (1988). "New Data and a revised structural model for ferrihydrite." Clays and Clay Minerals **36**(2): 111-124.
- Eick, M. J., J. D. Peak and W. D. Brady (1999). "The Effect of Oxyanions on the Oxalate-Promoted Dissolution of Goethite." Soil Science Society of America Journal **62**: 1133-1141.
- Ford, R. G. (2002). "Rates of Hydrous Ferric Oxide Crystallization and the Influence on Coprecipitated Arsenate." Environmental Science and Technology **36**(11): 2459-2463.
- Ford, R. G., P. M. Bertsch and K. J. Farley (1997). "Changes in Transition and Heavy Metal Partitioning during Hydrous Iron Oxide Aging." Environmental Science and Technology **31**(7): 2028-2033.
- Fredrickson, J. K., J. M. Zachara, D. W. Kennedy, H. Dong, T. C. Onstott, N. W. Hinman and S.-M. Li (1998). "Biogenic iron mineralization accompanying the dissimilatory reduction of hydrous ferric oxide by a groundwater bacterium." Geochimica et Cosmochimica Acta **62**(19/20): 3239-3257.

- Fujii, M., A. L. Rose, T. D. Waite and T. Omura (2006). "Superoxide-mediated Dissolution of Amorphous Oxyhydroxide in Seawater." Environmental Science and Technology **40**(3): 880-887.
- Fuller, C. C., J. A. Davis and G. A. Waychunas (1993). "Surface chemistry of ferrihydrite: Part 2. Kinetics of arsenate adsorption and coprecipitation." Geochimica et Cosmochimica Acta **57**: 2271-2282.
- Goldberg, S. (2002). "Competitive Adsorption of Arsenate and Arsenite on Oxides and Clay Minerals." Soil Science Society of America Journal **66**: 413-421.
- Goldberg, S. and C. T. Johnston (2001). "Mechanisms of Arsenic Adsorption on Amorphous Oxides Evaluated Using Macroscopic Measurements, Vibrational Spectroscopy, and Surface Complexation Modeling." Journal of Colloid and Interface Science **234**: 204-216.
- Grafe, M., M. J. Eick and P. R. Grossl (2001). "Adsorption of Arsenate (V) and Arsenite (III) on Goethite in the Presence and Absence of Dissolved Organic Carbon." Soil Science Society of America Journal **65**: 1680-1687.
- Grafe, M., M. J. Eick, P. R. Grossl and A. M. Saunders (2002). "Adsorption of Arsenate and Arsenite of Ferrihydrite in the Presence and Absence of Dissolved Organic Carbon." Journal of Environmental Quality **31**: 1115-1123.
- Gu, C. and K. G. Karthikeyan (2005). "Interaction of Tetracycline with Aluminum and Iron Hydrated Oxides." Environmental Science and Technology **39**(8): 2660-2667.
- Hansel, C. M., S. G. Benner and S. Fendorf (2005). "Competing Fe(II)-induced mineralization pathways of ferrihydrite." Environmental Science and Technology **39**(18): 7147-7153.
- Hansel, C. M., S. G. Benner, J. Ness, A. Dohnalkova, R. K. Kukkadapu and S. Fendorf (2003). "Secondary mineralization pathways induced by dissimilatory iron reduction of ferrihydrite under advective flow." Geochimica et Cosmochimica Acta **67**(16): 2977-2992.
- Hansel, C. M., S. G. Benner, P. Nica and S. Fendorf (2004). "Structural constraints of ferric (hydr)oxides on dissimilatory iron reduction and the fate of Fe(II)." Geochimica et Cosmochimica Acta **68**(15): 3217-3229.
- Harrington, J. M., S. Fendorf and R. F. Rosenzweig (1998). "Biotic Generation of Arsenic(III) in Metal(loid)-contaminated freshwater lake sediments." Environmental Science and Technology **32**(16): 2425-2430.
- Herbel, M.; Fendorf, S. Transformation and transport of arsenic within ferric hydroxide coated sands upon dissimilatory reducing bacterial activity. In *Advances in*

- Arsenic Research*; O'Day, P. A., Vlassopoulos, D., Meng, X., and Benning, L., Ed.; ACS Symposium Series 915; American Chemical Society: Washington, DC, 2005; pp 77-90.
- Hering, J. and P. Kneebone (2001). Biogeochemical Controls on Arsenic Occurrence and Mobility in Water Supplies. Environmental Chemistry of Arsenic. J. William T. Frankenberger. New York, Marcel Dekker, Inc.: 155-181.
- Hering, J. G. and W. Stumm (1990). Oxidative and Reductive Dissolution of Minerals. Reviews in Mineralogy: Mineral-Water Interface Chemistry. J. Michael F. Hochella and A. F. White. Washington, D.C., Mineralogical Society of America. **23**: 427-465.
- Hiemstra, T., R. Rahnemaie and W. H. van Riemsdijk (2004). "Surface complexation of carbonate on goethite: IR spectroscopy, structure and charge distribution." Journal of Colloid and Interface Science **278**: 282-290.
- Holm, T. R. (2002). "Effects of CO_3^{2-} /bicarbonate, Si, and PO_4^{3-} on Arsenic sorption to HFO." Journal of American Water Works Association **94**(4): 174-181.
- Hongshao, Z. and R. Stanforth (2001). "Competitive Adsorption of Phosphate and Arsenate on Goethite." Environmental Science and Technology **35**: 4753-4757.
- Hsia, T.-H., S.-L. Lo, C.-F. Lin and D.-Y. Lee (1994). "Characterization of arsenate adsorption on hydrous iron oxide using chemical and physical methods." Colloids and Surfaces A: Physicochemical and Engineering Aspects **85**: 1-7.
- Islam, F. S., A. G. Gault, C. Boothman, D. A. Polya, J. M. Charnock, D. Chatterjee and J. R. Lloyd (2004). "Role of metal-reducing bacteria in arsenic release from Bengal delta sediments." Nature **430**: 68-71.
- Jain, A. and R. H. Loeppert (2000). "Effect of Competing Anions on the Adsorption of Arsenate and Arsenite by Ferrihydrite." Journal of Environmental Quality **29**: 1422-1430.
- Jain, A., K. P. Raven and R. H. Loeppert (1999). "Arsenite and Arsenate Adsorption on Ferrihydrite: Surface Charge Reduction and Net OH- Release Stoichiometry." Environmental Science and Technology **33**(8): 1179-1184.
- Janney, D. E., J. M. Cowley and P. R. Buseck (2000). "Structure of synthetic 2-line ferrihydrite by electron nanodiffraction." American Mineralogist **85**: 1180-1187.
- Jia, Y., L. Xu, Z. Fang and G. P. Demopoulos (2006). "Observation of Surface Precipitation of Arsenate on Ferrihydrite." Environmental Science and Technology **40**: 3248-3253.

- Jones, C. A., H. W. Langner, K. Anderson, T. R. McDermott and W. P. Inskeep (2000). "Rates of Microbially Mediated Arsenate Reduction and Solubilization." Soil Science Society of America Journal **64**: 600-608.
- Kaiser, K., G. Guggenberger, L. Haumaier and W. Zech (1997). "Dissolved organic matter sorption on subsoils and minerals studied by ^{13}C -NMR and DRIFT spectroscopy." European Journal of Soil Science **48**: 301-310.
- Kim, M. J., J. Nriagu and S. Haack (2000). "Carbonate Ions and arsenic dissolution by groundwater." Environmental Science and Technology **34**(15): 3094-3100.
- Kneebone, P.E. (2000). Arsenic geochemistry in a geothermally impacted system: The Los Angeles Aqueduct. Ph.D. Thesis, California Institute of Technology, Pasadena, CA.
- Kneebone, P. E., P. A. O'Day, N. Jones and J. G. Hering (2002). "Deposition and Fate of Arsenic in Iron- and Arsenic-Enriched Reservoir Sediments." Environmental Science and Technology **36**(3): 381-386.
- Ko, I., J.-Y. Kim and K.-W. Kim (2004). "Arsenic speciation and sorption kinetics in the As-hematite-humic acid system." Colloids and Surfaces A: Physicochemical and Engineering Aspects **234**: 43-50.
- Kraemer, S. M., V. Q. Chiu and J. G. Hering (1998). "Influence of pH and competitive adsorption on the kinetics of ligand-promoted dissolution of aluminum oxide." Environmental Science and Technology **32**(19): 2876-2882.
- Krafft, T. and J. M. Macy (1998). "Purification and characterization of the respiratory arsenate reductase of *Chrysiogenes arsenatis*." European Journal of Biochemistry **255**: 647-653.
- Krom, M. D., P. Davison, H. Zhang and W. Davison (1994). "High Resolution pore water sampling with a gel sampler." Limnol. Oceanogr. **39**(8): 1967-1972.
- Langmuir, D., J. Mahoney and J. Rowson (2006). "Solubility products of amorphous ferric arsenate and crystalline scorodite ($\text{FeAsO}_4 \cdot 2\text{H}_2\text{O}$) and their application to arsenic behavior in buried mine tailings." Geochimica et Cosmochimica Acta **70**: 2942-2956.
- Langner, W. and W. P. Inskeep (2000). "Microbial Reduction of Arsenate in the Presence of Ferrihydrite." Environmental Science and Technology **34**(15): 3131-3136.
- Larsen, O. and D. Postma (2001). "Kinetics of reductive bulk dissolution of lepidocrocite, ferrihydrite, and goethite." Geochimica et Cosmochimica Acta **65**: 1367-1379.

- Latimer, W. M. (1952). The Oxidation States of the Elements and their Potentials in Aqueous Solutions. Englewood Cliffs, Prentice-Hall.
- Laverman, A. M., J. S. Blum, J. K. Schaefer, E. J. P. Phillips, D. R. Lovley and R. S. Oremland (1995). "Growth of Strain SES-3 with Arsenate and other diverse electron acceptors." Applied and Environmental Microbiology **61**(10): 3556-3561.
- Lin, H.-T., M. C. Wang and G.-C. Li (2004). "Complexation of arsenate with humic substance in water extract of compost." Chemosphere **56**: 1105-1112.
- Liu, F., A. D. Cristofaro and A. Violante (2001). "Effect of pH, phosphate and oxalate on the adsorption/desorption of arsenate on/from goethite." Soil Science **166**(3): 197-208.
- Lovley, D. R., E. J. P. Phillips and D. J. Lonergan (1991). "Enzymatic versus nonenzymatic mechanisms for Fe(III) reduction in aquatic sediments." Environmental Science and Technology **25**: 1062-1067.
- Macur, R. E., C. R. Jackson, L. M. Botero, T. R. McDermott and W. P. Inskeep (2004). "Bacterial Populations Associated with the Oxidation and Reduction of Arsenic in an Unsaturated Soil." Environmental Science and Technology **38**(1): 104-111.
- Makris, K. C., W. G. Harris, G. A. O'Connor and H. El-Shall (2005). "Long-term phosphorous effects on evolving physicochemical properties of iron and aluminum hydroxides." Journal of Colloid and Interface Science **287**: 552-560.
- Malasarn, D., C. W. Saltikov, K. M. Campbell, J. Santini, J. G. Hering and D. K. Newman (2004). "arrA is a reliable marker for As(V) respiration." Science **306**(5695): 455.
- Manceau, A. (1995). "The mechanism of anion adsorption in iron oxides: Evidence for the bonding of arsenate tetrahedra on free Fe(O,OH)₆ edges." Geochimica et Cosmochimica Acta **59**(17): 3647-3653.
- Manning, B. A., S. Fendorf, B. C. Bostick and D. L. Suarez (2002). "Arsenic (III) oxidation and arsenic (V) adsorption reactions on synthetic birnessite." Environmental Science and Technology **36**(5): 976-981.
- Manning, B. A., S. E. Fendorf and S. Goldberg (1998). "Surface Structures and Stability of Arsenic(III) on Goethite: Spectroscopic Evidence for Inner-Sphere Complexes." Environmental Science and Technology **32**(16): 2383-2388.
- Manning, B. A. and S. Goldberg (1996). "Modeling Competitive Adsorption of Arsenate with Phosphate and Molybdate on Oxide Minerals." Soil Science Society of America Journal **60**: 121-131.

- Manning, B. A. and S. Goldberg (1997). "Adsorption and Stability of Arsenic(III) at the Clay Mineral-Water interface." Environmental Science and Technology **31**: 2005-2011.
- Martell, A. E. and R. M. Smith (2001). NIST Critically Selected Stability Constants of Metal Complexes, Texas A&M University.
- McArthur, J. M., D. M. Banerjee, K. A. Hudson-Edwards, R. Mishra, R. Purohit, P. Ravenscroft, A. Cronin, R. J. Howarth, A. Chatterjee, T. Talukder, D. Lowry, S. Houghton and D. K. Chadha (2004). "Natural organic matter in sedimentary basins and its relation to arsenic in anoxic ground water: the example of West Bengal and its worldwide implications." Applied Geochemistry **19**: 1255-1293.
- McGeehan, S. L. and D. V. Naylor (1994). "Sorption and Redox Transformation of Arsenite and Arsenate in Two Flooded Soils." Soil Science Society of America Journal **58**: 337-342.
- Meng, X., S. Bang and G. P. Korfiatis (2000). "Effects of Silicate, Sulfate, and Carbonate on Arsenic Removal by Ferric Chloride." Water Research **34**(4): 1255-1261.
- Neuberger, C. S. and G. R. Helz (2005). "Arsenic(III) carbonate complexation." Applied Geochemistry **20**: 1218-1225.
- Newman, D. K. (2000). Arsenic. Encyclopedia of Microbiology, Academic Press. **1**: 332-338.
- Newman, D. K., D. Ahmann and F. M. Morel (1998). "A Brief Review of Microbial Arsenate Respiration." Geomicrobiology Journal **15**: 255-268.
- Newman, D. K., B. T.J. and F. M. Morel (1997). "Precipitation of arsenic trisulfide by *Desulfotomaculum auripigmentum*." Applied and Environmental Microbiology **63**(5): 2022-2028.
- Ng, J. C., J. Wang and A. Shraim (2003). "A global health problem caused by arsenic from natural sources." Chemosphere **52**: 1353-1359.
- Nickson, R., J. McArthur, W. Burgess, K. M. Ahmed, P. Ravenscroft and M. Rahman (1998). "Arsenic Poisoning of Bangladesh Groundwater." Nature **395**: 338.
- Nickson, R. T., J. M. McArthur, P. Ravenscroft, W. G. Burgess and K. M. Ahmed (2000). "Mechanism of arsenic release to groundwater, Bangladesh and West Bengal." Applied Geochemistry **15**: 403-413.
- Nordstrom, D. K. (2002). "Worldwide Occurrences of Arsenic in Groundwater." Science **296**.

- Nordstrom, D. K. and D. G. Archer (2003). Arsenic thermodynamic data and environmental geochemistry. Arsenic in Groundwater: Geochemistry and Occurrence. A. H. Welch and K. G. Stollenwerk. Norwell, Kluwer Academic Press: 1-25.
- NRC (1999). Arsenic in Drinking Water. Washington, DC, National Academy Press.
- NRC (2001). Arsenic in Drinking Water Update. Washington, DC, National Academy Press.
- Ona-Nguema, G., C. Careret, O. Benali, M. Abdelmoula, J. M. Genin and F. Jorand (2004). "Competitive formation of hydroxycarbonate green rust 1 versus hydroxysulfate green rust 2 in *Shewanella putrefaciens* cultures." Geomicrobiology Journal **21**(2): 79-90.
- Ona-Nguema, G., G. Morin, F. Juillot, G. Calas and G. B. Jr. (2005). "EXAFS Analysis of Arsenite Adsorption onto Two-Line Ferrihydrite, Hematite, Goethite, and Lepidocrocite." Environmental Science and Technology **39**: 9147-9155.
- Oremland, R., S. Hoefft, J. Santini, N. Bano, R. Hollibaugh and J. Hollibaugh (2002). "Anaerobic Oxidation of Arsenite in Mono Lake Water and by a Facultative, Arsenite-Oxidizing Chemoautotroph, Strain MLHE-1." Applied and Environmental Microbiology **68**(10): 4795-4802.
- Oremland, R. S., P. R. Dowdle, S. Hoefft, J. O. Sharp, J. K. Schaefer, L. G. Miller, J. S. Blum, R. L. Smith, N. S. Bloom and D. Wallschlaeger (2000). "Bacterial dissimilatory reduction of arsenate and sulfate in meromictic Mono Lake, California." Geochimica et Cosmochimica Acta **64**(18): 3073-3084.
- Oremland, R. S. and J. F. Stolz (2003). "The Ecology of Arsenic." Science **300**: 393-944.
- Pedersen, H. D., D. Postma and R. Jakobsen (2006). "Release of arsenic associated with the reduction and transformation of iron oxides." Geochimica et Cosmochimica Acta **70**: 4116-4129.
- Pedersen, H. D., D. Postma, R. Jakobsen and O. Larsen (2005). "Fast transformation of iron oxyhydroxides by the catalytic action of aqueous Fe(II)." Geochimica et Cosmochimica Acta **69**(16): 3967-3977.
- Peterson, M. L. and R. Carpenter (1986). "Arsenic distributions in porewaters and sediments of Puget Sound, Lake Washington, the Washington coast and Saanich Inlet, B.C." Geochimica et Cosmochimica Acta **50**: 353-369.

- Pierce, M. L. and C. B. Moore (1980). "Adsorption of arsenite on amorphous iron hydroxide from dilute aqueous solution." Environmental Science and Technology **14**(2): 214-216.
- Pierce, M. L. and C. B. Moore (1982). "Adsorption of arsenite and arsenate on amorphous iron hydroxide." Water Research **16**: 1247-1253.
- Radu, T., J. L. Subacz, J. M. Phillippi and M. O. Barnett (2005). "Effects of Dissolved Carbonate on Arsenic Adsorption and Mobility." Environmental science and Technology **39**(20): 7875-7882.
- Randall, S. R., D. M. Sherman and K. V. Ragnarsdottir (2001). "Sorption of As(V) on green rust (Fe₄(II)Fe₂(III)(OH)₁₂SO₄ · 3H₂O) and lepidocrocite ([γ]-FeOOH): Surface complexes from EXAFS spectroscopy." Geochimica et Cosmochimica Acta **65**(7): 1015-1023.
- Raven, K. P., A. Jain and R. H. Leoppert (1998). "Arsenite and Arsenate Adsorption on Ferrihydrite: Kinetics, Equilibrium, and Adsorption Envelopes." Environmental Science and Technology **32**(3): 344-349.
- Redman, A. D., D. L. Macalady and D. Ahmann (2002). "Natural Organic Matter Affects Arsenic Speciation and Sorption onto Hematite." Environmental Science and Technology **36**: 2889-2896.
- Reeburgh, W. S. and R. E. Ericson (1982). "A "dipstick" measurement for rapid, continuous chemical profiles in sediments." Limnol. Oceanogr. **27**(3): 556-559.
- Ritter, K., G. R. Aiken, J. F. Ranville, M. Bauer and D. L. Macalady (2006). "Evidence for the Aquatic Binding of Arsenate by Natural Organic Matter-Suspended Fe(III)." Environmental Science and Technology **40**: 5380-5387.
- Rochette, E. A., B. C. Bostick, G. Li and S. Fendorf (2000). "Kinetics of Arsenate Reduction by dissolved sulfide." Environmental Science and Technology **34**(22): 4714-4720.
- Roden, E. E. (2003). "Fe(III) Oxide Reactivity Toward Biological versus Chemical Reduction." Environmental Science and Technology **37**: 1319-1324.
- Roden, E. E. (2004). "Analysis of long-term bacterial vs. chemical Fe(III) oxide reduction kinetics." Geochimica et Cosmochimica Acta **68**(15): 3205-3216.
- Roden, E. E. and J. M. Zachara (1996). "Microbial Reduction of Crystalline Iron (III) Oxides: Influence of Oxide Surface Area and Potential for Cell Growth." Environmental Science and Technology **30**(5): 1618-1628.

- Root, R., S. Dixit, K. M. Campbell, A. Jew, J. G. Hering and P. A. O'Day (2006). "Arsenic sequestration by sorption processes in high-iron sediments." *In preparation*.
- Rosen, B. P. (1996). "Bacterial Resistance to heavy metals and metalloids." JBIC **1**: 273-277.
- Royer, R. A., W. D. Burgos, A. S. Fisher, B.-H. Jeon and B. A. Dempsey (2002). "Enhancement of Hematite Bioreduction by Natural Organic Matter." Environmental Science and Technology **36**(13): 2897-2904.
- Royer, R. A., B. A. Dempsey, B.-H. Jeon and W. Burgos (2004). "Inhibition of Biological Reductive Dissolution of Hematite by Ferrous Iron." Environmental Science and Technology **38**(1): 187-193.
- Ruby, C., C. Upadhyay, A. Gehin, G. Ona-Nguema and J.-M. R. Genin (2006). "In Situ redox flexibility of Fe(II)-(III) oxyhydroxycarbonate green rust and fougérite." Environmental Science and Technology **40**(15): 4696-4702.
- Saltikov, C. W., A. Cifuentes, K. Vankateswaran and D. K. Newman (2003). "The *ars* Detoxification System is Advantageous but not Required for As(V) Respiration by the Genetically Tractable *Shewanella* Species Strain ANA-3." Applied and Environmental Microbiology **69**(5): 2800-2809.
- Saltikov, C. W. and D. K. Newman (2003). "Genetic identification of a respiratory arsenate reductase." PNAS.
- Saltikov, C. W., R. Wildman and D. K. Newman (2005). "Expression Dynamics of Arsenic Respiration and Detoxification in *Shewanella* sp. Strain ANA-3." Journal of Bacteriology **187**(21): 7390-7395.
- Schecher, W. D. and D. C. McAvoy (1998). MINEQL+. Hallowell, Environmental Research Software.
- Schwertmann, U. (1991). "Solubility and dissolution of iron oxides." Plant and Soil **130**: 1-25.
- Schwertmann, U. and R. M. Cornell (1991). Iron Oxides in the Laboratory. Weinheim, Wiley-VCH.
- Scott, M. J. and J. J. Morgan (1995). "Reactions at Oxide Surfaces. 1. Oxidation of As(III) by Synthetic Birnessite." Environmental Science and Technology **29**(8): 1898-1905.
- Sherman, D. M. and S. R. Randall (2003). "Surface Complexation of arsenic(V) to iron(III) (hydr)oxides: Structural mechanism from ab initio molecular geometries

- and EXAFS spectroscopy." Geochimica et Cosmochimica Acta **67**(22): 4223-4230.
- Smedley, P. L. and D. G. Kinniburgh (2002). "A review of the source, behavior and distribution of arsenic in natural waters." Applied Geochemistry **17**: 517-568.
- Song, Y. and G. Muller (1999). Sediment-Water Interactions in Anoxic Freshwater Sediments: Mobility of Heavy Metals and Nutrients. Berlin, Springer-Verlag.
- Standard Methods for the Examination of Water and Wastewater (1995). Washington, D.C., American Public Health Association.
- Stolarik, G. and J. D. Christie (1999). Interim Arsenic Management Plan for Los Angeles. Proceedings of the 1999 American Water Works Association Annual Conference, Chicago, Illinois.
- Stookey, L. L. (1970). "Ferrozine-A new spectrophotometric reagent for iron." Analytical Chemistry **42**(7): 779-781.
- Stumm, W. and J. J. Morgan (1996). Aquatic Chemistry. New York, John Wiley & Sons, Inc.
- Su, C. and D. L. Suarez (1997). "*In situ* infrared speciation of adsorbed carbonate on aluminum and iron oxides." Clays and Clay Minerals **45**(6): 814-825.
- Su, C. and R. W. Puls (2004). "Significance of iron(II,III) hydroxycarbonate green rust in arsenic remediation using zerovalent iron in laboratory column tests." Environmental Science and Technology **38**(19): 5224-5231.
- Su, C. and R. T. Wilkin (2005). Arsenate and Arsenite Sorption on and Arsenite Oxidation by Iron(II,III) Hydroxycarbonate Green Rust. Advances in Arsenic Research: Integration of Experimental and Observational Studies and Implications for Mitigation. P. A. O'Day, D. Vlassopoulos, X. Meng and L. G. Benning. Washington, DC, American Chemical Society. **915**: 25-40.
- Sun, X. and H. E. Doner (1996). "An Investigation of Arsenate and Arsenite Bonding Structures on Goethite by FTIR." Soil Science **161**(12): 865-872.
- Suter, D., S. Banwart and W. Stumm (1991). "Dissolution of Hydrous Iron(III) Oxides by Reductive Mechanisms." Langmuir **7**: 809-813.
- Swartz, C. H., N. K. Blute, B. Badruzzman, A. Ali, D. Brabander, J. Jay, J. Besancon, S. Islam, H. F. Hemond and C. F. Harvey (2004). "Mobility of arsenic in a Bangladesh aquifer: Inferences from geochemical profiles, leaching data, and mineralogical characterization." Geochimica et Cosmochimica Acta **68**(22): 4539-4557.

- Swedlund, P. J. and J. G. Webster (1999). "Adsorption and polymerization of silicic acid on ferrihydrite and its effect on arsenic adsorption." Water Research **33**(16): 3413-3422.
- Tamaki, S. and J. W.T. Frankenberger (1992). "Environmental Biogeochemistry of Arsenic." Reviews of Environmental Contamination and Toxicology **124**: 79-110.
- Tanaka, T. (1981). "Gels." Scientific American **244**(1): 124-138.
- Tadanier, C. J., M. E. Schreiber and J. W. Roller (2005). "Arsenic Mobilization through Microbially Mediated Deflocculation of Ferrihydrite." Environmental Science and Technology **39**: 3061-3068.
- Teal, T. K., D. P. Lies, B. J. Wold and D. K. Newman (2006). "Spatio-metabolic Stratification of *Shewanella oneidensis* Biofilms." Applied and Environmental Microbiology **72**(11): 7324-7330.
- Thamdrup, B. (2000). "Bacterial Manganese and Iron Reduction in Aquatic Systems." Advances in Microbial Ecology **16**: 41-84.
- Thanabalasingam, P. and W. F. Pickering (1986). "Arsenic Sorption by Humic Acids." Environmental Pollution (Series B) **12**: 233-246.
- Tucker, M. D., L. L. Barton and B. M. Thomson (1998). "Reduction of Cr, Mo, Se, and U by *Desulfovibrio desulfuricans* immobilized in polyacrylamide gels." Journal of Industrial Microbiology and Biotechnology **20**: 13-19.
- Urrutia, M. M. and E. E. Roden (1998). "Microbial and Surface Chemistry Controls on Reduction of Synthetic Fe(III) Oxide Minerals by the Dissimilatory Iron-Reducing Bacterium *Shewanella alga*." Geomicrobiology **15**: 269-291.
- Urrutia, M. M., E. E. Roden and J. M. Zachara (1999). "Influence of Aqueous and Solid-Phase Fe(II) Complexants on Microbial Reduction of Crystalline Iron(III) Oxides." Environmental Science and Technology **33**: 4022-4028.
- van Geen, A., A. P. Robertson and J. O. Leckie (1994). "Complexation of carbonate species at the goethite surface: Implications for adsorption of metal ions in natural waters." Geochimica et Cosmochimica Acta **58**(9): 2073-2086.
- van Geen, A., J. Rose, S. Thoral, J. M. Garnier, Y. Zheng and J. Y. Bottero (2004). "Decoupling of As and Fe Release to Bangladesh groundwater under reducing conditions. Part II: Evidence from sediment incubations." Geochimica et Cosmochimica Acta **68**(17): 3475-3486.

- Villalobos, M. and J. O. Leckie (2000). "Carbonate adsorption on goethite under closed and open CO₂ conditions." Geochimica et Cosmochimica Acta **64**(22): 3787-3802.
- Villalobos, M. and J. O. Leckie (2001). "Surface Complexation Modeling and FTIR study of carbonate adsorption to goethite." Journal of Colloid and Interface Science **235**: 15-32.
- Violante, A. and M. Pigna (2002). "Competitive sorption of arsenate and phosphate on different clay minerals and soils." Soil Science Society of America Journal **66**: 1788-1796.
- Warwick, P., E. Inam and N. Evans (2005). "Arsenic's Interaction with Humic Acid." Environmental Chemistry **2**: 119-124.
- Waychunas, G. A., J. A. Davis and C. C. Fuller (1995). "Geometry of sorbed arsenate on ferrihydrite and crystalline FeOOH: Re-evaluation of EXAFS results and topological factors in predicting sorbate geometry, and evidence for monodentate complexes." Geochimica et Cosmochimica Acta **59**(17): 3655-3661.
- Waychunas, G. A., B. A. Rea, C. C. Fuller and J. A. Davis (1993). "Surface Chemistry of ferrihydrite: Part 1. EXAFS studies of the geometry of coprecipitated and adsorbed arsenate." Geochimica et Cosmochimica Acta **57**: 2251-2269.
- Welch, A. H. and M. S. Lico (1998). "Factors controlling As and U in shallow groundwater, southern Carson Desert, Nevada." Applied Geochemistry **13**(4): 521-539.
- Welch, A. H., D. B. Westjohn, D. R. Helsel and R. B. Wanty (2000). "Arsenic in Ground Water of the United States: Occurrence and Geochemistry." Groundwater **38**(4): 589-604.
- Wilkie, J. and J. G. Hering (1996). "Adsorption of arsenic onto hydrous ferric oxide: effects of adsorbate/adsorbent ratios and co-occurring solutes." Colloids and Surfaces A: Physicochemical and Engineering Aspects **107**: 97-110.
- Wilkie, J. and J. G. Hering (1998). "Rapid Oxidation of Geothermal Arsenic(III) in streamwaters of the eastern Sierra Nevada." Environmental Science and Technology **32**(5): 657-662.
- Willetts, D. B., R. C. Fox, S. L. Werner, M. Mukae, A. Schiffman, R. L. Blodnikar and J. F. LoBue (1967). Investigation of geothermal waters in the Long Valley area, Mono County. S. o. C. D. o. W. Resources: 141.
- Williams, A. G. B. and M. M. Scherer (2004). "Spectroscopic evidence for Fe(II)-Fe(III) electron transfer at the Fe oxide-water interface." Environmental Science and Technology **38**: 4782-4790.

- Xu, H., B. Allard and A. Grimvall (1991). "Effects of acidification and natural organic materials on the mobility of arsenic in the environment." Water, Air, and Soil Pollution **57-58**: 269-278.
- Zachara, J. M., R. K. Kukkadupu, J. K. Fredrickson, Y. A. Gorby and S. C. Smith (2002). "Biomining of Poorly Crystalline Fe(III) Oxides by Dissimilatory Metal Reducing Bacteria (DMRB)." Geomicrobiology Journal **19**: 179-207.
- Zhang, H. and W. Davison (1995). "Performance Characteristics of Diffusion Gradients in Thin Films for the in Situ Measurement of Trace Metals in Aqueous Solution." Analytical Chemistry **67**(19): 3391-3400.
- Zhang, H., W. Davison, b. Knight and S. McGrath (1998). "*In Situ* Measurements of Solution Concentrations and Fluxes of Trace Metals in soils using DGT." Environmental Science and Technology **32**(5): 704-710.
- Zhang, H., W. Davison, S. Miller and W. Tych (1995). "In situ high resolution measurements of fluxes of Ni, Cu, Fe, and Mn and concentration of Zn and Cd in porewaters by DGT." Geochimica et Cosmochimica Acta **59**(20): 4181-4192.
- Zinder, B., G. Furrer and W. Stumm (1986). "The coordination chemistry of weathering: II. Dissolution of Fe(III) oxides." Geochimica et Cosmochimica Acta **50**: 1861-1869.
- Zobrist, J., P. R. Dowdle, J. A. Davis and R. S. Oremland (2000). "Mobilization of Arsenite by dissimilatory reduction of adsorbed arsenate." Environmental Science and Technology **34**(22): 4747-4753.