

Gregory V. Lowry, Ph.D.

Professor, Carnegie Mellon University

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A. PROFESSIONAL PREPARATION

University of California, Davis, CA	Chemical Engineering	B.S. 1992.
University of Wisconsin, Madison, WI	Civil-Environmental Engineering	M.S. 1995
Stanford University, Stanford, CA	Civil-Environmental Engineering	Ph.D. 2000
Stanford University, Stanford, CA	Geological and Environmental Science	Post-doc
	Aqueous Geochemistry Group	7/00-4/01

B. APPOINTMENTS AND POSITIONS

Professor, CMU, Department of Civil and Environmental Engineering (7/09-present)

Deputy Director, NSF Center for Environmental Implications of Nanotechnology (CEINT) (September 1, 2008-present)

Associate Professor, CMU, Department of Civil and Environmental Engineering (7/06-6/09)

Assistant Professor, CMU, Department of Civil and Environmental Engineering (7/01-06/06)

Post-Doctoral Researcher, Stanford University, Geological and Environmental Sciences (8/00-4/01)

Ph.D. Research Assistant, Stanford University, Civil and Environmental Engineering (1/96 – 7/00)

Associate Engineer, Technology Transfer, *RWD Technologies Inc.*, Columbia, MD. (1994)

Wastewater Treatment Plant Engineer/QC Supervisor, *Colorstrip Inc.*, Richmond, CA (1993-1994)

C. SELECTED PUBLICATIONS (project related)

Auffan Mélanie, Rose Jérôme, Bottero Jean-Yves, Gregory V. Lowry, Jolivet Jean-Pierre, Wiesner, Mark R. (2009). Towards a definition of nanoparticles based on novel size-dependent properties. *Nature Nanotechnology* (in press).

Mark R. Wiesner, Gregory V. Lowry, Kimberly Jones, Michael F. Hochella, Richard T. Di Giulio., Elizabeth Casman, Emily Bernhardt (2009). Decreasing Uncertainties in Assessing Environmental Exposure, Risk and Ecological Implications of Nanomaterials *Environ Sci. Technol.* (in press).

Tanapon Phenrat, Hye-Jin Kim, Fritjof Fagerlund, Tissa Illangasekare, Robert D. Tilton, Gregory V. Lowry (2009). Particle Size Distribution, Concentration, and Magnetic Attraction Affects Transport of Polymer-modified Fe⁰ Nanoparticles in Sand Columns. *Environ Sci. Technol.* 43 (13), pp 5079–5085.

Phenrat, T., Liu, Y., Tilton, R. D., Lowry, G. V. (2009). Adsorbed Polyelectrolyte Coatings Decrease Fe⁰ Nanoparticle Reactivity with TCE in Water: Conceptual Model and Mechanisms. *Environ. Sci. Technol.* 43 (5), pp 1507–1514

Phenrat, T., Saleh, N., Sirk, K., Kim, H., Matyjaszewski, K., Tilton, R., Lowry, G.V. (2008). Stabilization of Aqueous Nanoscale Zerovalent Iron Dispersions by Anionic Polyelectrolytes: Adsorbed anionic polyelectrolyte layer properties and their effect on aggregation and sedimentation. *J Nanoparticle Res.* 10 (5) 795-814.

Phenrat, T., Saleh, N., Sirk, K., Tilton, R., Lowry, G. V. (2007) “Aggregation and Sedimentation of Aqueous Nanoiron Dispersions” *Environ. Sci. Technol.*, 41 (1) 284-290.

M. R. Wiesner, G. V. Lowry, P. Alvarez, D. Dionysiou, and P. Biswas. (2006) “Progress and research needs towards assessing the risks of manufactured nanomaterials.” *Environ. Sci. Technol.*, 40 (14) 4336-4345.

Saleh, N., Phenrat, T., Sirk, K., Dufour, B., Ok, J., Sarbu, T., Matyjaszewski, K., Tilton, R., Lowry, G. V. (2005). “Adsorbed Triblock Copolymers Deliver Reactive Iron Nanoparticles to the Oil/Water Interface.” *NanoLett.* 5 (12), 2489-2494.

OTHER PUBLICATIONS

Long, T., Saleh, N., Tilton, R., Lowry, G. V., Veronesi, B. (2006) “Titanium Dioxide (P25) Produces Oxidative Stress in Immortalized Brain Microglia (BV2): Implication of Nanoparticle Neurotoxicity” *Environ. Sci. Technol.* 40 (14) 4346-4352.

Liu, Y.; Choi, H.; Dionysiou, D.; Lowry, G. V. (2005). “TCE Hydrodechlorination by amorphous monometallic nanoiron.” *Chem. Mater.*, 17, 5315-5322.

Liu Y., Majetich, S. A., Tilton, R. D., Sholl, D. S., Lowry, G.V., (2005) “TCE Dechlorination Rates, Pathways, and Efficiency of Nanoscale Iron Particles with Different Properties”, *Environ. Sci. Technol.* 39 (5) 1338-1345.

Lowry, G. V., Johnson, K. M., (2004) "Congener Specific PCB Dechlorination by Microscale and Nanoscale Zero-valent Iron in a Methanol/water solution." *Environ. Sci. Technol.*, 38(19) 5208-5216.

D. SYNERGISTIC ACTIVITIES

Guest Editor for special issue of *Journal of Environmental Quality* on "Environmental Occurrences of Nanomaterials and their Behavior, Fate, and Ecological Effects."

External Advisory board member for the Center for Biological and Environmental Nanotechnology (CBEN), February 2007-January 2009. External Advisory Committee for Duke's Superfund Basic Research Program, February 2008-January 2010.

Review Panelist for EPA's Draft Nanomaterial Research Strategy (NRS), April 2008. Reviewer NAS report on "Federal Research Strategy for Nanomaterials EHS." August 2008.

Developed new course entitled "Environmental Implications of Nanotechnology" for graduate and undergraduates students, Fall 2007.

Co-organizing first international iCEIN meeting, Washington DC, September 9-11, 2009. Co-organizing symposium on Interdisciplinary Approaches to Safe Nanotechnologies at the *Materials Research Society* (MRS) Fall Meeting, Boston, MA Nov 30-Dec 1, 2010. Co-organizing session on Environmental Applications and Implications of nanotechnology for the *Division of Environmental Chemistry* at PacificChem, Hawaii, December 2010. Co-organizing a session at *AGU Fall Meeting on Fate and Transport of Nanomaterials* in porous media, San Francisco, CA, December 2009.

Treasurer, Sigma Xi-CMU chapter (June 2005-present).

Mentored undergraduate students. Dan Schoenfelder: evaluating the efficacy of different types of commercially available NZVI for groundwater remediation, AWMA Scholarship Recipient (June 2008 \$10k); Lisa Plimpton: evaluating the biodegradability of polymeric nanoparticle surface modifiers, Meeting of the Minds Poster winner (May 2008, \$300).

Proposal Review panelist for NSF (Bioengineering and Environmental Systems-July 2002, May 2003; June 2007), DoD (Strategic Environmental Research and Development Program-April 2002; April 2007; Army Corps of Engineers, June 2005), EPA (Nanotechnology/Environment program- August 2003, 2005), NIEHS (Nanotechnology for Bioremediation, June 2008).

Peer reviewer for Environmental Science and Technology, Nano Letters, Journal of Contaminant Hydrology, Energy Sources, Environmental Engineering Science, Industrial and Engineering Chemistry Research, Journal of Environmental Engineering, Journal of Nanoparticle Research, Journal of Environmental Quality, Applied Catalysis B: Environmental, Chemosphere, Journal of the American Chemical Society, Water Research, and Water Resources Research.

E. COLLABORATORS and OTHER AFFILIATIONS (last 4 years)

Alvarez, Pedro, (Rice University), Bernhardt, Emily (Duke), Biswas, Pratim (Washington University), Brown, Gordon E. Jr. (Stanford University), Di Giulio, Rich (Duke), Dionysiou, Dion (University of Cincinnati), Dzombak, David (CMU), Hochella, Mike (VT), Hughes, Joe (Georgia Tech), Illangasekare, Tissa (Colorado School of Mines), Jones, Kim (Howard U), Keith, David (U of Calgary), Kim, Christopher, (Chapman College), Majetich, Sara (CMU), Matyjaszewski, Krzysztof (CMU), Minkley, Edwin (CMU), Pederson, Joel, (Wisconsin-Madison), Reible, Danny (UT-Austin), Rytuba, James (U.S. Geological Survey), Shaw, Samuel (Oxford University), Strazisar, Brian (DOE/NETL), Tilton, Robert (CMU), VanBriesen, Jeanne (CMU), Veronesi, Bellina (US EPA), Wiesner, Mark (Duke University), Xing, Baoshan (UMASS).

GRADUATE AND POSTDOCTORAL ADVISORS

Post-doctoral research-Gordon E. Brown, Jr. (Stanford University)

Ph.D. – Martin Reinhard (Stanford University)

MS – Gerald Eykholt (University of Wisconsin-Madison)

THESIS and POST DOCTORAL ADVISEES

Ph.D. Students and Post Docs: Mei Sun (CMU), Brian Reinsch (CMU), Trish Golas (CMU), Teresa Kirschling (CMU), Craig Griffith (CMU/NETL), Hye-Jin Kim (CMU),.

Prior students: Karl Greden, Barbara Kutchko (DOE-NETL), Tanapon Phenrat (CMU-post doc), Navid Saleh (University of South Carolina), Joshua Stolaroff (AAAS Fellow US EPA), Yueqiang Liu (Weston Solutions, NH), Sameer Khaitan (Cal Trans, San Francisco, CA), Kathleen Johnson (SAIC, Las Vegas, NV), Paul Murphy (NY City Dept. of Education), Raghunath Kurnool (Langan I Eng. & Env. Services, NJ), Kathleen McDonough (ENSR/Retec Group), Julian Fairey (University of Arkansas). Sixteen graduate students and post docs total (4 M.S., 12 Ph.D., 2 post docs).