

XIAO GUANG MENG

Professor, Ph.D., P.E.

Center for Environmental Systems
Department of Civil, Environmental, and Ocean Engineering
Stevens Institute of Technology
Hoboken, NJ 07030, USA
Phone: (201) 216-8014
E-mail: xmeng@stevens.edu

Education

Ph.D. in Environmental Engineering, August 1993, *Syracuse University, Syracuse, NY.*
M.S. in Marine Chemistry, July 1985, *Shandong College of Oceanography, China*
B.S. in Chemistry, July 1982, *Shandong College of Oceanography, China*

Professional Experience

Professor, January 2007 – present
Associate Professor, January 2000 – December 2006
Research Associate Professor, January 1999 – December 1999
Research Assistant Professor, August 1997 - December 1998
Research Engineer, January 1994 - July 1997
Postdoctoral Research Associate, January 1993 - December 1993
Center for Environmental Systems, Stevens Institute of Technology
Research Associate, July 1985 - August 1987
Institute of Environmental Chemistry of the Chinese Academy of Sciences, Beijing, China

Book

“Advances in Arsenic Research: Integration of Experimental and Observational Studies and Implications for Mitigation” ACS Symposium Series Vol. 915, American Chemical Society, (2005) Editors: Peggy A. O’Day, Dimitrios Vlassopoulos, Xiaoguang Meng, Liane G. Benning; Oxford University Press, P 448.

Patents

1. Methods of preparing a surface-activated titanium oxide product and of using same in water treatment processes. Xiaoguang Meng, Mike Dadachov, George P. Korfiatis, and Christos Chritodoulatos, David J. Moll, Geoffrey Paul Onifer, Daniel B. Rice, Robert E. Reim, Fredrick W. Vance, Harlan Robert Goltz, Chan Han, William I. Harris. US Patent: 7,473,369 (2009).
2. Method of treatment, stabilization and heave control for chromite ore processing residues (COPR) and chromium contaminated soils. Mahmoud Wazne, Dimitris Dermatas, Dilhan M. Kalyon, *Xiaoguang Meng*, Maria Kaouris, John J. Morris. US Patent: 7,452,163 (2008).

3. Method of Preparing a Surface-Activated Titanium Oxide Product and of Using the Same in Water Treatment Processes. Xiaoguang Meng, Mike Dadachov, George P. Korfiatis, and Christos Christodoulatos. US Patent: 6,919,029 (2005).
4. Iron powder and sand filtration process for treatment of water contaminated with heavy metals and organic compounds. Xiaoguang Meng and George P. Korfiatis. US Patent: 6,942,807 (2005).

Publications in Peer-Reviewed Journals

1. Hao, J. M., Han, M. J., Wang, C., Meng, X. G. (2009) "Enhanced removal of arsenite from water by a mesoporous hybrid material – thiol functionalized silica coated activated alumina" *Microporous & Mesoporous Materials* 124, 1-7.
2. Xu, Z. H., Meng, X. G. (2009) "Size effects of nanocrystalline TiO₂ on As(V) and As(III) adsorption and As(III) photooxidation" *J. Hazardous Materials* 168, 747-752.
3. Jing, C. Y., Meng, X. M., Edwin Calvache, E., Jiang, G. B. (2009) "Remediation of organic and inorganic arsenic contaminated groundwater using a nanocrystalline TiO₂-based adsorbent" *Environ Pollution* 157, 2514-9.
4. Hao, J., Han, M. J., Meng, X. G. (2009) "Thiol-functionalized inorganic-organic hybrid adsorbents for effective arsenite removal: preparation and characterization" *J. Hazardous Materials* (in press).
5. Krishnani, K., Meng, X. G., Dupont, L. (2009) "Metal Ions binding onto lignocellulosic biosorbent" *J. Environ. Sci. Health, Part A*, A44(7).
6. Wang, C., Lippincott, L., Yoon, I. H., Meng, X. G. (2009) "Modeling, Rate-Limiting Step Investigation, and Enhancement of the Direct Bio-Regeneration of Perchlorate Laden Anion-Exchange Resin" *Water Research* 43, 127 – 136.
7. Yoon, I. H., Meng, X. G., Wang, C., Bang, S. B., Choe, E. Y., Lippincott, L., Kim, K. W. (2009) "Perchlorate adsorption and desorption on activated carbon and anion exchange resin" *J. Hazardous Materials* 164, 87-94.
8. Wang, C., Lippincott, L., Meng, X. G. (2008) "Feasibility and kinetics study on the direct bio-regeneration of perchlorate laden anion-exchange resin" *Water Research* 42, 4619-4628.
9. Liu, S. Q., Jing, C. Y., Meng, X. M. (2008) "Arsenic Remobilization in Water Treatment Adsorbents under Reducing Conditions: Part II. XAS and Modeling Study" *Science Total Environment* 392, 137-144.
10. Xu, Z. H., Jing, C. Y., Li, F. S., Meng, X. G. (2008) "Mechanisms of Photocatalytical Degradation of Monomethylarsonic and Dimethylarsenic Acid using Nanocrystalline Titanium Dioxide" *Environmental Science Technology*, 42, 2349-2354.
11. Chin Choy, C., Wazne, M., Meng, X. G. (2008) "Application of an empirical transport model to simulate retention of nanocrystalline titanium dioxide in sand columns" *J. Hazardous Materials*, 71, 1794-1801.
12. Jing, C. Y., Liu, S. Q., Meng, X. M. (2008) "Arsenic Remobilization in Water Treatment Adsorbents under Reducing Conditions: Part I. Incubation Study" *Science Total Environment*, 389, 188-194.
13. Krishnani, K., Meng, X. G., Christodoulatos, C., Buddu, V. M. (2008) "Biosorption Mechanisms of Nine Different Heavy Metals onto Biomatrix from Rice Husk" *J. Hazardous Materials*, 153, 1222-1234.

14. Hao, J. M., Han, M. J., Guo, K. P., Zhao, Y. X., Qiu, L., Shen, Y. Q. and Meng, X. G. (2008) "A Novel NLO Axothiothene-based Chromophore: Synthesis, Characterization, Thermal Stability and Optical Nonlinearity" *Materials Letters*, 62, 973-976.
15. Wang, C., Lippincott, L., Meng, X. G. (2008) "Kinetics of Biological Perchlorate Reduction and pH Effect" *J. Hazardous Materials*, 153, 663-669.
16. Tu, Z. G., Hao, J. M., Kharidia, R., Meng, X. G., Liang, J. F. (2007) "Improved Stability and Selectivity of Lytic Peptides through Self-assembly" *Biochemical Biophysical Research Communications*, 361, 712-717.
17. Han, M. J., Meng, X. G., Lippincott, L. (2007) "Determination of Configuration of Arsenite-Glutathione Complexes Using ECSTM" *Toxicology Letters*, 175, 57-63.
18. Han, M. J., Hao, J. J., Christodoulatos, C., George P. Korfiatis, G. P., Wan, L. J. and Meng, X. G. (2007) "Direct Evidence of Arsenic(III)-Carbonate Complexes Obtained Using ECSTM" *Analytical Chemistry*, 79, 3615-3622.
19. Hao, J. M., Han, M. J., Yang, Y. F., Shen, Y. Q., Qiu, L., Meng, X. M., Shen, Q. S., Cao, Z. Q. (2006) "A Device-Quality Thermosetting Polyurethane with Improved Processability and High Thermal Stability of Dipole Alignment for Electro-Optic Applications" *Reactive & Functional Polymers*, 66(8), 832-839.
20. Krishnani, K., Parimala, V., Gupta, B. P., Azad, I. S., Meng, X. G., Abraham, M. (2006) "Bagasse-Assisted Bioremediation of Ammonia from Shrimp Farm Wastewater" *Water Environmental Research*, 78, 938-950.
21. Jing, C. Y., Liu, S., Korfiatis, G. P., Meng, X. G. (2006) "Leaching Behavior of Cr(III) in Stabilized/Solidified Soil" *Chemosphere*, 64, 379-385.
22. Chin Choy, C., Korfiatis, G. P., Meng, X. G. (2006) "Removal of Depleted Uranium from Contaminated Soils" *J. Hazardous Materials*, 136, 53-60.
23. Wazne, M., Meng, X. G., Korfiatis, G. P., Christodoulatos, C. (2006) "Carbonate Effects on Hexavalent Uranium Removal from Water by Nanocrystalline Titanium Dioxide" *J. Hazardous Materials*, 136, 47-52.
24. Pena, M. E., Meng, X. G., Korfiatis, G. P., Jing, C. Y. (2006) "Adsorption Mechanism of Arsenic on Nanocrystalline Titanium Dioxide" *Environmental Science Technology*, 40, 1257-1262.
25. Jing, C. Y., Meng, X. G., Liu, S., Baidas, S., Patraju, R., Christodoulatos, C., Korfiatis, G. K. (2005) "Surface Complexation of Organic Arsenic on Nanocrystalline Titanium Oxide" *J. Colloid Interface Science*, 290, 14-21.
26. Jing, C. Y., Liu, S. Q., Patel, M., Meng, X. G. (2005) "Arsenic Leachability in Water Treatment Adsorbents" *Environmental Science Technology*, 39, 5481-5487.
27. Pena, M. E., Korfiatis, G. P., Patel, M., Lippincott, L. and Meng, X. G. (2005) "Adsorption of As(V) and As(III) by Nanocrystalline Titanium Dioxide" *Water Research*, 39, 2327-2337.
28. Bang, S. B., Patel, M., Lippincott, L., Meng, X. G. (2005) "Removal of Arsenic from Groundwater by Granular Titanium Dioxide Adsorbent" *Chemosphere*, 60, 389-397.
29. Bang, S. B., Korfiatis, G. P., Meng, X. G. (2005) "Removal of Arsenic from Water by Zero-Valent Iron" *J. Hazardous Materials*, 121, 61-67.
30. Bang, S. B., Johnson, M. D., Korfiatis, G. P., Meng, X. G. (2005) "Chemical Reactions between Arsenic and Zero-Valent Iron in Water" *Water Research*, 39, 763-770.
31. Jing, C. Y., Liu, S., Meng, X. G. (2005) "Arsenic Leachability and Speciation in Cement Immobilized Water Treatment Sludge" *Chemosphere*, 59, 1241-1247.

32. Cheng, Z., van Geen, A, Jing, C. Y., Meng, X. G., Seddique, A., Ahmed, K. M. (2004) "Performance of a Household-Level Arsenic Removal System during 4-Month Developments in Bangladesh" *Environmental Science Technology*, 38, 3442-3448.
33. Jing, C. Y., Meng, X. G., Korfiatis, G. P. (2004) "Lead Leachability in Stabilized/Solidified Soil Samples Evaluated with Different Leaching Tests" *J. Hazardous Materials*, 114, 101-110.
34. Krishnani, K. K., Parimala, V., Meng, X. G. (2004) "Detoxification of Chromium(VI) in Coastal Water Using Lignocellulosic Agricultural Waste" *Water SA*, 30(4), 541-545.
35. Dermatas, D., Moon, D. H., Menounou, N., Meng, X. G., Hires, R. (2004) "An Evaluation of Arsenic Release from Monolithic Solids Using a Modified Semi-Dynamic Leaching Test" *Journal of Hazardous Materials*, 116, 25-38.
36. Bang, S. B. and Meng, X. G. (2004) "A Review of Arsenic Interactions with Anions and Iron Hydroxides" *Environmental Engineering Research*, 9(4), 184-192.
37. Jing, C. Y., Korfiatis, G. P., Meng, X. G., (2003) "Immobilization Mechanisms of Arsenate in Iron Hydroxide Sludge Stabilized with Cement" *Environmental Science Technology*, 37, 5050-5056
38. Wazne, M., Korfiatis, G. P., Meng, X. G. (2003) "Carbonate Effects on Hexavalent Uranium Adsorption by Iron Oxyhydroxide" *Environmental Science Technology*, 37, 3619-3624.
39. Bang, S. B., Meng, X. G. and Bang, K. W. (2003) "A Study of Dissolved Oxygen and pH Effects on Arsenate Removal Using Zero-Valent Iron" *Journal of Korean Society of Environmental Engineering*, 25(11), 1337-1474.
40. Dermatas, D. and Meng, X. G. (2003) "Utilization of Fly Ash for Stabilization/Solidification of Heavy Metals" *Engineering Geology*, 2189, 1-18.
41. Dermatas, D., Dadachov, M., Mirabito, M. and Meng, X. G. (2003) "Strength Development of Solidified/Stabilized Organic Waste and Optimum Treatment Design" *J. Air & Waste Manage. Assoc.*, 53, 1363-1472.
42. Meng, X. G., Korfiatis, G. P., Bang, S. B. and Bang, K. W. (2002) "Combined Effects of Anions on Arsenic Removal by Iron Hydroxides" *Toxicology Letters*, 133, 103-111.
43. Meng, X. G., Bang, S. B. and Korfiatis, G. P. (2002) "Removal of Selenocyanate from Water Using Elemental Iron" *Water Research*, 36, 3867-3873.
44. Bang, K. W., Meng, X. M., Bang, S. B. and Lee, J. H. (2002) "Effect Analysis of Dissolved Oxygen and pH on Arsenic Removal in Water by Electrochemical Process" *Journal of Korean Society of Urban Environment*, 2(1), 25-35.
45. Meng, X. G., Korfiatis, G. P., Jing, C. Y., Christodoulatos, C. (2001) "Redox Transformations of Arsenic and Iron in Water Treatment Sludge during Aging and TCLP Extraction" *Environmental Science Technology*, 35, 3476-3481.
46. Meng, X. G., Korfiatis, G. P., Christodoulatos, C. and Bang, S. B. (2001) "Treatment of Arsenic in Bangladesh Well Water Using a Household Co-precipitation and Filtration System" *Water Research*, 35, 2805-2710.
47. Meng, X. G., Bang, S. B. and Korfiatis, G. P. (2000) "Effect of Silicate, Sulfate and Carbonate on Arsenic Removal by Ferric Hydroxide", *Water Research*, 34, 1255-1261.
48. Meng, X. G., Hua, Z., Dermatas, D. and Wang, W. (1998) "Immobilization of Mercury(II) in Contaminated Soil with Used Tire Rubber", *Journal of Hazardous Materials*, 57, 231-241.
49. Meng, X.G. and Letterman, R.D. (1996) "Modeling Cadmium and Sulfate Adsorption by Fe(OH)₃/SiO₂ Mixed Oxides", *Water Research*, 30, 2148-2154.

50. Dermatas, D. Meng, X. G. Leachability Study of Chromium Contaminated Soils to Assess the Long-Term Effectiveness of a Remediation Technology, *Geotechnical Special Publication. n 46/1 1995. ASCE, New York, NY, USA. p 449-462*
51. Meng, X.G. and Letterman, R.D. (1993). "Modeling Ion Adsorption on Aluminum Hydroxide Modified Silica", *Environmental Science Technology*, 27, 1924-1929.
52. Meng, X.G. and Letterman, R.D. (1993). "Effect of Component Oxide Interaction on the Adsorption Properties of Mixed Oxides", *Environmental Science Technology*, 27, 970-975.
53. Meng, X.G. and Letterman, R.D. (1991). "Immobilization of Cadmium in Sediment by Treatment with Aluminum Salt and Freeze-Thaw Dehydration", *Colloids Surfaces*, 54, 219-33.
54. Meng, X.G., Zhang, Z.B. and Liu, L.S. (1988) "Exchange Additivity of Zinc in Solid Mixtures in Seawater. I. Exchange Additivity of Mixtures", *Acta Oceanologica Sinica*, 7, 253-260.
55. Meng, X.G., Zhang, Z.B. and Liu, L.S. (1988). "Exchange Additivity of Zinc in Solid Mixtures in Seawater. II. Effect of δ -MnO₂ and Montmorillonite Interaction on the Stepwise Exchange", *Acta Oceanologica Sinica*, 7, 261-265.
56. Meng, X.G., Zhang, Z.B. and Liu, L.S. (1988). "Exchange Additivity of Zinc in Solid Mixtures in Seawater. III. Stepwise Isotherms of the Mixtures", *Acta Oceanologica Sinica*, 7, 388-394.

Research Grants and Contracts Received

1. "Laboratory Testing of Treatment of Nitrate in Refinery Wastewater," \$13,509, 2009, ConocoPhillips Bayway Refinery.
2. "Removal of Perchlorate from Aqueous Streams by Agricultural Waste Biosorbents," Amount of funding: \$250,000, Project Duration: 2009-2010, Funding Agent: ARDEC-DoD.
3. Sensors for Explosives Detection and Quantification," \$250,000, 2009-2010, ARDEC-DoD.
4. "Evaluation of DOWEX RSC Resin Filter at the Toms River Site," \$60,193, 2007-2008, United Water.
5. Co-PI, "Development of New Materials to Concentrate Nutrients from Digestate," \$156,792, 2008-2010, Questor Center.
6. "Advanced Sensors and Improved Analytical Techniques for Energetics Detection and Characterization," \$255,000, 2007-2008, ARDEC-DoD.
7. Field Pilot Testing of Regeneration of Spent Anion Exchange Resins Used in Filtration Treatment of Perchlorate," \$70,000, 2007 – 2008, NJDEP.
8. "Regeneration of Spent Anion Exchange Resin Used in Filtration Treatment of Perchlorate," \$99,268, 2005 – 2007, NJDEP.
9. "Identification of treatment technologies for removing contaminants from domestic water systems pursuant to PWTA (Private Well Testing Act)," \$24,999, 2005 – 2007, NJDEP.
10. "Detection of Explosives in Water Using Surface Enhanced Raman Scattering," \$317,674, 06/01/06 – 05/31/08, ARDEC-DoD.
11. "Characterization and Evaluation of Complex Chemistry of Process Wastes Generated from Treating Naturally Occurring Arsenic in Drinking Water," \$25,000, 2003 – 2004, NJDEP.
12. "Installation of a Fluoride and Arsenic Removal System at Fort Irwin, CA," \$100,000, 11/20/02 – 11/19/04, ARDEC-DoD.

13. "In Situ Depleted Uranium Contaminated Water Remediation Technology Development and Demonstration," \$574,900, 11/20/02 – 11/19/04, ARDEC-DoD.
14. "Treatment of Arsenic and Chromium in Contaminated Waters," \$174,601, 2001 – 2003, NJDEP.
15. "Filtration Testing of Adsorptive Media MetSorb™ for Removal of Arsenic from Groundwater," \$25,000, 2002, NJDEP.
16. "Field Pilot Filtration Testing for Removal of Arsenic from Groundwater," \$20,000, 2002, NJDEP.
17. "Naturally Occurring Heavy Metal Contaminant Removal from Groundwater," \$1,625,390, 2001 – 2004, ARDEC-DoD.
18. "Development and Demonstration of Technologies for Treatment of Depleted Uranium at Aberdeen Proving Grounds," \$1,687,821, 2001 – 2003, ARDEC-DoD.
19. "Assessment and remediation of As enrichments in groundwater," \$71,100, 2000 – 2005, NIH.
20. "In-situ remediation of arsenic in groundwater by metallic iron," \$83,951, 1999 – 2001, Hazardous Substances Management Research Center (HSMRC) (A National Science Foundation Industrial/University Cooperative Center)
21. "Study of selenocyanate interaction with metallic iron in aqueous solution," \$20,000, 1998 – 2000, The Petroleum Research Fund, American Chemical Society.
22. "Evaluation of leaching tests of heavy metal contaminated soil matrices treated by solidification/stabilization technologies," \$175,000, 1998 - 2000, NJDEP.
23. "Removal of heavy metals by metallic iron treatment and enhanced filtration," \$104,200, 1997 – 1999, HSMRC.
24. "Removal of mercury, SO₂, and NO_x from flue gases by iron treatment," \$25,000, 1998 – 1999, HSMRC.
25. "Stabilization/solidification of organic contaminated soil and sludge," \$102,000, 1996 – 1998, HSMRC.
26. "Field pilot demonstration of enhanced sand filtration for heavy metal removal," \$78,612, 1996 – 1997, HSMRC.
27. "Removal of heavy metals by adsorptive filtration," \$105,000, 1994 - June 1996, HSMRC.
28. "Inorganic removal treatability testing," \$15,500; 1995 – 1995, Dames Moore, Inc., Cranford, NJ.

Awards

1. The Tech Museum Awards, Intel Environmental Award Finalist, 2001 (<http://www.techawards.org/laureates/stories/index.php?id=15>)
2. The Davis Memorial Award for Research, Stevens Institute of Technology, 2002
3. American Water Works Association, New Jersey Section, Research Award, 2004
4. Thomas Alva Edison Award, New Jersey Research and Development Council, for the most important patent contribution from a scientist in industry in New Jersey, 2006

Affiliation

American Chemical Society
 American Water Works Association