

Curriculum Vita  
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**John S. Gierke, Ph.D., P.E.**

Associate Professor of Geological & Environmental Engineering  
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**Education**

- 1990 Ph.D. (Environmental) Engineering, Michigan Technological University, Houghton
- 1996 M.S. Civil Engineering, Michigan Technological University, Houghton
- 1984 B.S. Civil Engineering, Michigan Technological University, Houghton

**Professional Experience**

- Associate Professor - September 1996 to Present
  - Department of Geological and Mining Engineering and Sciences
- Coordinator Strategic Faculty Hiring Initiative – October 2008 to present
  - Office of the Provost and Academic Affairs
  - Michigan Technological University, Houghton, Michigan 49931-1295
- Visiting Associate Professor – September 2005 through November 2005
  - Department of Environmental Engineering & Earth Sciences
  - Clemson University, Clemson, South Carolina
- Assistant Professor - July 1990 through August 1996
  - Department of Geological and Engineering and Sciences
  - Michigan Technological University, Houghton, Michigan 49931-1295
- Visiting Associate Professor - January 1999 through December 1999
  - Department of Civil and Environmental Engineering
  - University of Delaware, Newark, Delaware
- Summer Research Faculty Visitor - June 1991 to August 1991
  - Environmental Sciences Division, Oak Ridge National Laboratory
  - Oak Ridge, Tennessee 37831.

**Professional Memberships**

Registered Professional Engineer in the State of Michigan (Lic. No. 6201039135), Association of Environmental Engineering and Science Professors (Member of Professional Society Liaison Committee, 2001-present), American Geophysical Union, National Ground Water Association, American Society of Civil Engineers

## Curriculum Vita for **John S. Gierke**

### **Professional Honors and Awards**

- 2007 Presidents Council State Universities of Michigan Distinguished Professor of the Year
- 2006 Graduate Faculty Mentoring Award, Michigan Technological University
- 2004 Associate Editor for *Ground Water Monitoring Remediation*, National Ground Water Association
- 2004 Editor's Citation for Excellence for Refereeing in *Water Resources Research*, American Geophysical Union
- 1992 U.S. Dept. of Energy Environmental Restoration & Waste Management Distinguished Junior Faculty Award
- 1992 Elected to full membership in Sigma Xi (The Research Society)

### **Professional Honors and Awards of Students Resulting from Their Research**

- 2008 Kevin J. Endsley, Silvia Espino, & Josh Richardson, 2<sup>nd</sup> Place Undergraduate Research, Michigan Technological University Undergraduate Expo; 2<sup>nd</sup> Place World Water Day Events, Michigan Tech Center for Water & Society
- 2005 Aqua Terra Tech: 1<sup>st</sup> Place, Haested Methods National Design Competition.
- 2004 Deborah N. Beach: Institute of Hazardous Materials Management Research Grant
- 2001 Kristi Gerber: 3<sup>rd</sup> Place Undergraduate Research Exposition, Michigan Technological University
- 2000 Darby J. Van Antwerp: 1<sup>st</sup> Place Undergraduate Research Exposition, Michigan Technological University
- 1999 Mellisa A. Le: 1<sup>st</sup> Place Undergraduate Research Exposition, Michigan Technological University
- 1999 Yingxin Gu: Best Poster, 22<sup>nd</sup> Midwest Chemistry Environmental Workshop
- 1996 Tammi L. Johnstone: Outstanding Student Presentation (Poster), Fall AGU Meeting
- 1991 Harriet Cornachione: Best Research Topic and Abstract, Midwest Symposium of Student Research in Hydrogeology.

### **Externally Funded Research Projects (Total>\$6.5M)**

- 1) Gierke, PI/PD (formerly G.J.S. Bluth PI/PD), E.L. Gross, co-PI, W.I. Rose, co-PI, and G.P. Waite, Remote Sensing for Hazard Mitigation and Resource Protection in Pacific Latin America Project, National Science Foundation Partnerships for International Research and Education, \$2,300,000, September 2005 – August 2010.
- 2) Gierke, PI/PD (formerly J.R. Mihelcic PI/PD), J.R. Mihelcic, and V.J. Fuchs, Vertical Flow Constructed Wetlands; Nitrogen Removal and Sustainability, Water Environment Research Foundation, \$25,000, January 2008 – December 2009.

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- 3) Gierke, J.S., PI/PD, P.A. Larsen, co-PI, and M.A. Raber, co-PI, Geoscience PrEP (Precollege Enterprise Program) for Seeding Diverse Interest in Geosciences by Using Apprentice Enterprises for Watershed Protection, National Science Foundation Opportunities for Enhancing Diversity in Geosciences, \$98,000, August 2005 – July 2007.
- 4) Huntzinger, D.N., PI/PD, and J.S. Gierke, co-PI, “Carbon Dioxide Sequestration in Cement Kiln Dust,” Michigan Space Grant Consortium, \$5000, May 2006-May 2007.
- 5) Gierke, J.S., PI/PD, and P.A. Larsen, co-PI, “Field Testing of Rain Gardens,” Michigan Space Grant Consortium, \$7500, May 2006-May 2007.
- 6) Gierke, J.S., PI/PD, “Aquifer Supply Evaluation,” Keweenaw Bay Indian Community Department of Natural Resources, \$103,160, September 2000 – September 2004.
- 7) Beach, D.N., PI/PD, and J.S. Gierke, co-PI, “Modeling of Carbon Dioxide Sequestration in Industrial Waste Materials,” Institute of Hazardous Materials Management & Michigan Hazardous Materials Management, \$12,000, May 2004 – April 2005.
- 8) Sherman, H.M., PI/PD, and J.S. Gierke, co-PI, “Hydrogeochemical Factors Controlling the Occurrence of Elevated Uranium in Sandstone Aquifers,” Michigan Space Grant Consortium, \$10,000, May 2002-May 2004.
- 9) Castor, M.G., PI/PD, and J.S. Gierke, co-PI, “Pilot Scale Testing of Ozone Sparging,” Michigan Space Grant Consortium, \$5,000, May 2002-May 2003.
- 10) Mayer, A.S., PI/PD, G.J.S. Bluth, co-PI, J.R. Budd, co- Investigator, J.S. Gierke, co- Investigator, J.E. Huntoon, co- Investigator, W.D. Pennington, co- Investigator, W.I. Rose, co- Investigator, and J.R. Wood, co-Investigator, “Fellowship Program for Computational Geological Science and Engineering,” Department of Education, \$609,000, September 1999 – August 2003.
- 11) Plichta, M.R., PI/PD, S. Sorby, co-PI, C. Anderson, co-Investigator, D. Lynch, co- Investigator, J.S. Gierke, co-Investigator, and P. Joyce, co-Investigator, “Redesigning Engineering Education with Active Learning and Integration Through the Engineering Enterprise,” NSF, \$749,976, October 1998 - September 2001.
- 12) Gierke, J.S., PI/PD, N.J. Hutzler, co-PI, and D.L. Perram, Co-Investigator, "Design Guidance for Air Sparging of DNAPLs in Unconsolidated Geologic Environments," EPA/DOE/DoD Strategic Environmental Research and Development Program (SERDP), \$460,339, August 1997 - July 2001.
- 13) Rose, W.I., PI/PD, G.J.S. Bluth, co-PI, and J.S. Gierke, co-PI, “Volcanic Cloud/Atmosphere Interactions: The First Week,” NSF, \$203,871, December 1997 - November 2000.
- 14) Hutzler, N.J., PI/PD, J.S. Gierke, co-PI, G.L. Hein, Post-doc., and R.W. Falta (Clemson Univ.) "Field-Scale Model for Air Sparging Performance Assessment and Design," DOE Research Opportunities Awards (ROA), \$326,271, August 1996 –September 1999.
- 15) Hutzler, N.J., PI/PD, and J.S. Gierke, co-PI, "Design Manual for the Extraction of Contaminants from Unconsolidated Media: Air Sparging/Soil Vapor Extraction," EPA/DOE/DoD Strategic Environmental Research and Development Program, \$250,000, July 1994 - July 1997.

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- 16) Shonnard, D.R., PI/PD, A.S. Mayer, co-PI, and J.S. Gierke, co-PI, "In Situ Subsurface Remediation Technologies: Integration into an Interdisciplinary Engineering Curriculum," NSF Combined Research-Curriculum Develop. Prog., \$300,000, Sept. 1995 to Aug. 1997.
- 17) Gierke, J.S., PI/PD, U.S. Department of Energy, Environmental Restoration and Waste Management Junior Faculty Award, "In Situ Mixing/Steam Stripping of Organically-Contaminated Soil," 1992-1994, \$100,000.
- 18) Gierke, J.S., PI/PD, and N.J. Hutzler, co-PI, "Pesticide Transport Under Unstable (Fingered) Flow Conditions," U.S. Department of Agriculture, 1992-1994, \$120,000.
- 19) Gierke, J.S., PI/PD, Martin Marietta Energy Systems, Inc., "Modelling and Experimental Studies of VOC Removal from Low-Permeable Soils by Steam Injection Under Physically-Mixed Conditions," \$50,307. Research Contract, 1991-1992.
- 20) Gierke, J.S., PI/PD, "Organic Chemical Interactions in Clays and Their Removal by Vapor Extraction," National Science Foundation, Research Initiation Program, 1991-1993, \$66,000.
- 21) Hand, D.W. (co-PI/PD), J.C. Crittenden (co-PI/PD), and J.S. Gierke (co-PI). "Development of a Mathematical Model to Evaluate the Operation of the Multi-filtration Unit in the Space Station's Drinking Water Treatment System," McDonnell Douglas Space Systems Company--Huntsville Division, Alabama, 1990-1991, \$173,000.
- 22) Hutzler, N.J., PI/PD, A. Maclean, co-PI, W.C. Kerfoot, co-PI, T.J. Bornhorst, co-PI, and J.S. Gierke, co-PI, "A Regional Center for Groundwater Education in Michigan at Michigan Technological University," W.K. Kellogg Foundation, Battle Creek, Michigan, 1990-1993, \$534,000.

### **Peer-Reviewed Publications and Manuscripts in Review and in Press**

- 1) Fuchs, V.J., J.S. Gierke, J.R. Mihelcic "Hydraulic model comparison of vertical flow regimes during soil clogging," *Water Practice* (Special Issue on Watershed Management and Ecology), in review.
- 2) Huntzinger, D.N., J.S. Gierke, L.L. Sutter, S.K. Kawatra, and T.C. Eisele, "Mineral Carbonation for Carbon Sequestration in Cement Kiln Dust from Waste Piles," *J. Haz. Materials*, in review.
- 3) Huntzinger, D.N., J.S. Gierke, S.K. Kawatra, T.C. Eisele, and L.L. Sutter, "Carbon Dioxide Sequestration in Cement Kiln Dust through Mineral Carbonation," *Environ. Sci. Tech.*, in review.
- 4) Gierke, J.S., "Manually Constructed and Operated Water Wells," Chapter 16 in *Field Guide in Engineering for Development Workers: Water Supply, Sanitation Systems, and Indoor Air Quality*, Mihelcic, J.R., E.A. Myre, L.M. Fry, and B.D. Barkdoll (eds). American Society of Civil Engineers (ASCE) Press, Reston, VA (scheduled for publication in 2009).
- 5) Anderson, C.P., L.L. Sutter, D.N. Huntzinger, and J.S. Gierke, "Effects of Carbonation on the Mineral Composition of Cement Kiln Dust," (refereed) *Proceedings of the Twenty-Ninth Conference on Cement Microscopy*, Quebec City, PQ, Canada May 20 -24, pp. 442-471, 2007.

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- 6) Van Antwerp, D.J., R.W. Falta, and J.S. Gierke, "Numerical Simulation of Field Scale Contaminant Mass Transfer During Air Sparging," *Vadose Zone Journal*, 7(1), 294–304, 2007. doi:10.2136/vzj2006.0126
- 7) Sherman, H.M., and J.S. Gierke, "Elevated uranium in aquifers of the Jacobsville Sandstone, Upper Peninsula, Michigan, USA," *Ground Water Monitoring & Remediation*, 27(2), 106-118, 2007.
- 8) Huntzinger, D.N., M.J. Hutchins, J.S. Gierke, and J.W. Sutherland, "Evolving Undergraduate Engineering Education for the 21st Century, Part 1: Enabling Sustainable Thinking," *International Journal of Engineering Education*, 23(2), 218-230, 2007.
- 9) Heron, G., J.S. Gierke, B. Faulkner, S. Mravik, A.L. Wood, and C.G. Enfield, "Pulsed Air Sparging in Aquifers Contaminated with Dense Non-Aqueous Phase Liquids," *Ground Water Monitoring and Remediation*, 22(4), 73-82, 2002.
- 10) El-Beshry, M.Z., J.S. Gierke, and P.B. Bedient, "Practical Modeling of Soil Vapor Extraction at a Jet-Fuel Spill Site," *Journal of Environmental Engineering*, 127(7), 630-638, 2001.
- 11) Gierke, J.S., "Conventional Vapor Extraction," Section 7.2.1 in CHAPTER 7. REMEDIATION OF ORGANIC CHEMICALS IN THE VADOSE ZONE by L. Murdoch, in *Vadose Zone Science and Technology Solutions*, B.B. Looney and R.W. Falta (eds.), Battelle Press, Columbus, Ohio, Volume II, pp. 951-969, 2000.
- 12) Gierke, J.S., D.L. Sanders, and D.L. Perram, "Laboratory Studies of Aqueous Partitioning Tracer Tests for Measuring Nonaqueous Phase Liquid Volumes," *Water Environment Research*, 71(4), 465-474, 1999.
- 13) Gierke, J.S., C.L. Wojick, and N.J. Hutzler, "Field Test of Air Sparging Coupled with Soil Vapor Extraction," Chapter 11 in *Innovative Subsurface Remediation: Field Testing of Physical, Chemical, and Characterization Technologies*, ACS Symposium Series 725, edited by M.L. Brusseau, D.A. Sabatini, J.S. Gierke, and M.D. Annable, American Chemical Society, Washington, D.C., 153-166, 1999.
- 14) Gierke, J.S., D.R. Shonnard, and A.S. Mayer, "Multidisciplinary Subsurface Remediation Courses: Fundamentals, Experiments, and Design Projects," *Journal of Engineering Education*, 555-565, 1998 Supplement.
- 15) Wojick, C.L., N.J. Hutzler, and J.S. Gierke, "Solute Movement in an Unsaturated Sand Under Unstable (Fingered) Flow Conditions: Tracer Results," in *Shallow Groundwater Systems, ICH-18*, Chapter 16, 191-205, P. Dillon and I. Simmers, eds., AA.Balkema, Rotterdam, The Netherlands, 1998.
- 16) Hein, G.L., J.S. Gierke, N.J. Hutzler, and R.W. Falta, "Three-Dimensional Experimental Testing of a Two-Phase Flow-Modeling Approach for Air Sparging," *Ground Water Monitoring & Remediation*, 17(3), 222-230, 1997.
- 17) Gierke, J.S., and S.E. Powers, "Increasing Implementation of In Situ Treatment Technologies Through Field-Scale Performance Assessments," *Water Environment Research*, 69(2), 1997.

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- 18) Gierke, J.S., C. Wang, O.R. West, and R.L. Siegrist, "In Situ Mixed Region Vapor Stripping in Low-Permeability Media. 3. Modeling of Field Tests," *Environmental Science & Technology*, 29(9), 2208-2216, 1995.
- 19) Siegrist, R.L., O.R. West, M.I. Morris, D.A. Pickering, D.W. Greene, C.A. Muhr, D.D. Davenport, and J.S. Gierke, "In Situ Mixed Region Vapor Stripping in Low-Permeability Media. 2. Full-Scale Field Experiments," *Environmental Science & Technology*, 29(9), 2198-2207, 1995.
- 20) West, O.R., R.L. Siegrist, J.S. Gierke, S.W. Schmunk, A.J. Lucero, and H.L. Jennings, "In Situ Mixed Region Vapor Stripping in Low-Permeability Media. 1. Process Features and Laboratory Experiments," *Environmental Science & Technology*, 29(9), 2191-2197, 1995.
- 21) Gierke, J.S., N.J. Hutzler, and D.B. McKenzie, "Vapor Transport in Unsaturated Soil Columns: Implications for Vapor Extraction," *Water Resources Research*, 28(3), 323-336, 1992.
- 22) Gierke, J.S., N.J. Hutzler, and J.C. Crittenden, "Modeling the Movement of Volatile Organic Chemicals in Columns of Unsaturated Soil," *Water Resources Research*, 26(7), 1529-1547, 1990.
- 23) Hutzler, N.J., B.E. Murphy, and J.S. Gierke, "State of Technology Review: Soil Vapor Extraction Systems," *EPA 600/2-89-024*, 87 pp., 1989.
- 24) Hutzler, N.J., J.S. Gierke, and L.C. Krause, "Movement of Volatile Organic Chemicals in Soils," in *Reactions and Movement of Organic Chemicals in Soils*, B.L. Sawhney and K. Brown, eds., Chapter 15, 373-404, *Special Publication No. 22*, Soil Science Society of America, Madison, Wisconsin, 1989.
- 25) Hutzler, N.J., J.C. Crittenden, J.S. Gierke, and A.S. Johnson, "Transport of Organic Compounds with Saturated Groundwater Flow: Experimental Results," *Water Resources Research*, 22(3), 285-295, 1986.

### **Publications Reviewed by an Editor**

- 1) Gierke, J.S., Review of: *Optimal Control of Soil Venting: Mathematical Modeling and Applications*, H.H. Gerke, U. Hornung, Y. Kelanemer, M. Slodika, and S. Schumacher. Review Published in: *Automatica*, 37(5), 790-791, 2001.
- 2) El-Beshry, M., J.S. Gierke, P.B. Bedient, "Modeling the Performance of an SVE Field Test," in *Vadose Zone Science and Technology Solutions*, B.B. Looney and R.W. Falta (eds.), (Battelle Press, Columbus, Ohio, 2000), Case Study in Chapter 7 (by L. Murdoch) of Volume II, pp. 1157-1169.
- 3) Brusseau, M.L., J.S. Gierke, and D.A. Sabatini, "Field Demonstrations of Innovative Subsurface Remediation Technologies: Introduction," Chapter 1 in *Innovative Subsurface Remediation: Field Testing of Physical, Chemical, and Characterization Technologies*, ACS Symposium Series 725, edited by M.L. Brusseau, D.A. Sabatini, J.S. Gierke, and M.D. Annable, American Chemical Society, Washington, D.C., 2-5, 1999.
- 4) Huebner, R.S., R.P. Brownell, J.S. Gierke, B.W. Behrman, S.B. Garland, M.R. Scalf, P.D. Kuhlmeier, A.C. Newby, and B.M. Thomson, "Reviewing State Groundwater Legislation and Regulation," *Water Environment and Technology*, 4(11), 51-57, 1992.

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- 5) Hutzler, N.J., J.S. Gierke, and B.E. Murphy, "Vaporizing VOCs," *Civil Engineering*, 60(4), 57-60, 1990.

### **Presentations (38), Proceedings Papers (20), Posters and Abstracts for Major Professional Meetings**

- 1) Bruning, J.N., J.S. Gierke, and A.L. Maclean, "Digital Processing and Data Compilation Approach for Using Remotely Sensed Imagery to Identify Geological Lineaments in Hard-Rock Terrains: An Application for Groundwater Exploration in Nicaragua," American Society for Photogrammetry and Remote Sensing, 2009 Annual Conference, March 9-13, 2009 Baltimore, Maryland, USA. Full length paper to appear in the proceedings. (To be presented by Bruning)
- 2) Gross, E L, Gierke J S, Kome A, 2008 Monitoreo de Recursos Hidricos Subterraneos Sencillos, Barato, y Local, ¿Hay Esperanza?; Caracterizacion de los Efectos Temporales en Pozos Perforados con Bombas de Mecate en Acuíferos Fracturados Basálticos en Nicaragua XI Congreso Latinoamericano de Hidrogeología, Quito. Full length paper appeared in the Proceedings CD.
- 3) FitzGerald, K.A., J.S. Gierke, et al., "Engaging Urban Students in Geoenvironmental Education Using Storm Water Management Techniques," 2008 Ground Water Summit, Memphis, Tennessee, March 31 - April 2, 2008. (Presented by FitzGerald)
- 4) Fuchs, V.J., J.S. Gierke, and J.R. Mihelcic, "Hydraulic Model Comparison of Vertical Flow Regimes During Soil Clogging," Water Environment Federation's Annual Technical Exhibition and Conference (WEFTEC), Water Environment Federation, Arlington, VA, 2007. Full length paper appeared in Proceedings CD. (Presented by Fuchs)
- 5) Gierke, J.S., E.L. Gross, E.A. Myre, and A. Kome, "A Technologically Appropriate Method for Measuring the Specific Capacity of Rope-Pump Wells," 2008 Ground Water Summit, Memphis, Tennessee, March 31 - April 2, 2008. (Presented by Gierke)
- 6) Gross, E.L., J.S. Gierke, and A. Kome, "Characterization of Seasonal Effects on the Specific Capacity of Rope-Pump Wells in a Fractured-Rock Aquifer in Nicaragua," 2007 Annual Water Resources Conference of the American Water Resources Association, November 12-15, 2007, Albuquerque, New Mexico. (Presented by Gross)
- 7) Bluth G.J., Gierke J.S., Gross E.L., Kieckhafer P.B., Rose W.I. (2006) Assessment of a merged research and education program in Pacific Latin America. *Eos Trans. AGU*, 87(552), Fall Meet. Suppl., Abstract ED51C-0840
- 8) Bluth, G.J.S., Gierke, J.S., Gross, E.L., and W.I. Rose (2006) Remote sensing for volcanic hazard mitigation in Ecuador, El Salvador, Guatemala, and Nicaragua. *Cities on Volcanoes 4*, Quito, Ecuador, January 23-27, 2006.
- 9) Gierke, J.S., and E.L. Gross, "Using Groundwater Exploration Projects in Developing Countries for Undergraduate Engineering Education," National Ground Water Association Ground Water Summit, 23-26 April 2006, San Antonio, Texas. (Presented by Gierke)

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- 10) Barbour, J.N., R.W. Porritt, J.S. Gierke, and Bendall, K.A., Beach, D.N., Diehl, J.F., Jankowski, K., Lawson, G.T., McEachin, M.J., Pennington, W.D., Solla, C.D., and Young, C.T., "Geophysical Exploration for Ground Water in Boaco, Nicaragua," National Ground Water Association Ground Water Summit, 23-26 April 2006, San Antonio, Texas. (Presented by Barbour)
- 11) Bluth, G.J.S., Gross, E.L., Gierke, J.S., and W.I. Rose, 2005 Remote sensing for hazard mitigation and resource protection in Pacific Latin America, American Geophysical Union annual meeting, San Francisco, CA.
- 12) Sherman, H. M., J. S. Gierke, and C.P. Anderson, "Elevated uranium in aquifers of the Jacobsville Sandstone, Upper Peninsula, Michigan, USA," Proceedings of the 2005 National Ground Water Conference on Naturally Occuring Contaminants, Radium, Radon, And Uranium; February 24-25, 2005, Charleston, South Carolina; P7-18. (Presented by Anderson)
- 13) Gierke, J.S., "Aqua Terra Tech: A Multiyear, Multidisciplinary Undergraduate Enterprise Working on Water Resources Development and Protection," Association of Environmental Engineering & Science Professors First Biennial Research and Education Conference, 23-27 July 2005, Clarkson University, Potsdam, New York. (Poster presented by Gierke)
- 14) Beach, D.N., J.S. Gierke, and others, "Carbon Sequestration in Waste Mineral Byproducts," Fourth Annual Conference on Carbon Capture & Sequestration, 2-5 May 2005, U.S. Department of Energy, Alexandria, Virginia. (Presented by Gierke)
- 15) Kremer, Theodore J. Gierke, John S., Drelich, Jaroslaw Imhoff, Paul T.; Surfactant-Enhanced Air Sparging: Laboratory Evaluation of Performance, WEFTEC 2003 Conference Proceedings; October 2003; paper 16 (on CD).
- 16) Sherman, H.M., and J.S. Gierke, "Elevated Uranium in the Aquifers of the Jacobsville Sandstone," *Eos Trans. AGU*, 84(46), Fall Meet. Supplement, Abstract H51C-1049, 2003 (presented by Sherman).
- 17) Gierke, J.S., M. Donofrio, and C. Garcia, "Development of a Wellhead Protection Program for a Native American Community," International Conference on the University as Citizen: Engaging Universities and Communities, Tampa, FL, February 21-24, 2001. Full length paper appeared in proceedings (Poster presented by Gierke).
- 18) Gierke, J.S., D.A. Taege, D.L. Perram, and N.J. Hutzler, "Field-Scale Performance of Air Sparging for Removing a Dense Nonaqueous Phase Liquid from a Aquifer," 5<sup>th</sup> International Symposium and Exhibition on Environmental Contamination in Central and Eastern Europe, Prague, Czech Republic, 12-14 September 2000. Full length paper appeared in proceedings (Presented by Gierke).
- 19) Taege, D.A., J.S. Gierke, D.L. Perram, and N.J. Hutzler, "Field-Scale Study of the Performance of Air Sparging for Removing a Dense Nonaqueous Phase Liquid (Tetrachloroethylene) from a Coastal Plain Aquifer," 32<sup>nd</sup> Mid-Atlantic Industrial and Hazardous Waste Conference, J. Klduff, S. Komisar, and M. Nyman (eds.), (Technomic Publishing Co., Inc., Lancaster, Pennsylvania, 2000), pp. 125-134. (Presented by Taege)

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- 20) Stright, L.E., and J.S. Gierke, "Modeling of Oxygen Mass Transfer During Biosparging," *In Situ Bioremediation of Petroleum Hydrocarbon and Other Organic Compounds*, B.C. Alleman and A. Leeson, eds., vol. 5, no. 3, The Fifth International In Situ and On-Site Bioremediation Symposium, April 19-22, 1999, San Diego, California, 97-102. (Presented by Stright)
- 21) El-Beshry, M.Z., J.S. Gierke, and P.B. Bedient, "Application of a Multicomponent 3-Dimensional, Vapor Transport Model for Simulating Data from a Full-Scale SVE System for Removing Jet Fuel," Proceedings of the 1998 Petroleum Hydrocarbons and Organic Chemicals in Ground Water: Prevention, Detection, and Remediation, Conference and Exposition, 11-13 November 1998, American Petroleum Institute and National Ground Water Association, Houston, Texas, pp. 367-376, 1998. (Presented by El-Beshry)
- 22) Gierke, J.S., C.L. Wojick, J.M. Smith, and N.J. Hutzler, "Air Sparging Performance in a NAPL-Contaminated, Sandy-Gravel Aquifer," *Groundwater Quality: Remediation and Protection*, Proceedings of GQ 98, September 1998, M. Herbert and K. Kovar (eds.), IAHS Publication no. 250, IAHS Press, Oxfordshire, United Kingdom, pp. 119-124, 1998. (Presented by Gierke)
- 23) Stright, L.E., and J.S. Gierke, "Using Moments to Aid in Model Calibration of Air Sparging Column Data," *EOS, Transactions, American Geophysical Union*, vol. 79, no. 45, 1998. (Poster Presented by Stright)
- 24) Gierke, J.S., Wojick, C.L., and N.J. Hutzler, "A Controlled Field Evaluation of Air Sparging Performance for Remediation of a Complex Contaminant Mixture in a Sandy-Gravel Aquifer," Invited presentation at the Fifth Chemical Congress of North America, November 11-15, 1997 Cancun, Mexico.
- 25) Wojick, C.L., J.S. Gierke, and N.J. Hutzler, "A Field Study of Air Sparging Performance," *Proceedings: 213th American Chemical Society National Meeting*, Vol. 37, No. 1, San Francisco, California, April 13-17, 1997, Washington, D.C.: American Chemical Society, pp. 229-231. (Presented by Wojick)
- 26) Gierke, J.S., and S.E. Powers, "In Situ Groundwater Treatment Technologies: Increased Implementation Through Results of Field-Scale Performance Assessments," Proceedings of WEFTEC '95, pp. 547-557, Water Environment Federation, Miami Beach, Florida, October 21-25, 1995. (Presented by Gierke)
- 27) Johnstone, T.L., C.L. Wojick, N.J. Hutzler, and J.S. Gierke, "Modeling Solute Transport Under Fingering Flow Conditions: a Two-Dimensional, Two-Domain Approach," Proceedings: 1995 Fall Meeting of the American Geophysical Union, San Francisco, December 11-15, abstract published in *EOS, Transactions, American Geophysical Union*, vol. 76, no. 46, pp. 195-196, 1995. (Poster Presentation by Johnstone, which was awarded an Outstanding Student Presentation)
- 28) Gierke, J.S., C.L. Wojick, and N.J. Hutzler, "Solute Movement in an Unsaturated Sand Under Unstable (Finger) Flow Conditions: Tracer Results," Proceedings: Water Down Under 94, Adelaide, South Australia, November 21-25, 1994, The Institution of Engineers, Australia, Barton, A.C.T., Australia, Vol. 2-Part A: Groundwater Papers, pp. 87-92, 1994.

## Curriculum Vita for **John S. Gierke**

- 29) Hein, G.L., N.J. Hutzler, and J.S. Gierke, "Quantification of the Mechanisms Controlling the Removal Rate of Volatile Contaminants by Air Sparging," Proceedings of the 1994 National Conference on Environmental Engineering, pp. n/a, American Society of Civil Engineers, Boulder, Colorado, July 11-13, 1994. (Presented by Hein)
- 30) Hein, G.L., N.J. Hutzler, J.S. Gierke, and S. Haase, "Three Dimensional, Laboratory-Scale Air Sparging Hydrodynamics," Proceedings: 1994 Fall Meeting of the American Geophysical Union, San Francisco, December 6-10, abstract published in *EOS, Transactions, American Geophysical Union*, vol. 75, no. 44, pg. 286, 1994. (Oral Presentation by Hein)
- 31) Carpenter, M.D., J.S. Gierke, R.L. Siegrist, and O.R. West, "Vapor Phase VOC Transport in Physically-Mixed Clay Soils," Proceedings of the 1993 NGWA Conference on Petroleum Hydrocarbons and Organic Chemicals in Ground Water: Prevention, Detection, and Restoration, 479-491, Houston, Texas, November 10-12, 1993. (Presented by Carpenter)
- 32) Ebsch, J.L., and J.S. Gierke, "An Experimental Study of Intrinsic Permeability and Removal of Automobile Transmission Fluid and p-Xylene with a Clay Soil," 1993 Fall Meeting of the American Geophysical Union, San Francisco, December 5-9, abstract published in *EOS, Transactions, American Geophysical Union*, vol. 74, no. 43, pg. 289, 1993. (Presented by Ebsch)
- 33) Wang, C., J.S. Gierke, S.W. Schmunk, O.R. West, and R.L. Siegrist, "Modeling Volatile Organic Chemical Removal by In-Situ Soil Mixing/Hot-Gas Stripping," Poster Abstracts for the NGWA Annual Convention and Exposition: Chlorinated Volatile Organic Compounds in Ground Water, Kansas City, MO, October 17-20, *Ground Water*, 31(5), pg. 852, 1993. (Poster Presented by Wang)
- 34) Gierke, J.S., O.M. Reyes, and R.L. Siegrist, "Modeling Volatile Organic Chemical Removal by *In Situ* Soil Mixing/Steam Stripping," Proceedings of the 5th IGWMC/AGWSE Conference on Solving Ground Water Problems with Models, pp. 397-412, Dallas, Texas, February 11-13, 1992. (Presented by Gierke)
- 35) Gierke, J.S., S.W. Schmunk, C. Wang, O.M. Reyes, and R.L. Siegrist, "*In Situ* Mixing Coupled with Steam Injection for Removing TCE from a Clay Soil," Summer Meeting of AIChE, Minneapolis, Minnesota, August 9-12, 1992.
- 36) Mitchell, R.J., A.S. Mayer, J.S. Gierke, and N.J. Hutzler, "Unsaturated Solute Transport in a Fingered Flow System," 1992 Fall Meeting of the American Geophysical Union, San Francisco, December 5-9, abstract published in *EOS, Transactions, American Geophysical Union*, vol. 73, no. 43, pg. 198, 1992. (Presented by Mitchell)
- 37) Gierke, J.S., N.J. Hutzler and D.B. McKenzie "Organic Vapor Transport in Columns of Granular and Aggregated Soils," ASA/AGU Workshop on Characterization of Transport Phenomena in the Vadose Zone, Tucson, Arizona, April 2-5, 1991.
- 38) Cornachione, H.S., J.S. Gierke, and S.D. McDowell "Fabric Changes in Clays Permeated with Organic Liquids," Clay Minerals Society 28th Annual Meeting, Houston, Texas, October 5-10, 1991. (Presentation by Cornachione)

## Curriculum Vita for **John S. Gierke**

- 39) Gierke, J.S., N.J. Hutzler, and D.B. McKenzie, "Experimental and Model Studies of the Mechanisms Influencing Vapor Extraction Performance," Proceedings of the 1990 Conference on Petroleum Hydrocarbons and Organic Chemicals in Ground Water: Prevention, Detection, and Restoration, pp. 325-338, National Water Well Association/American Petroleum Institute, Houston, Texas, October 31 - November 2, 1990. (Presented by Gierke)
- 40) Hutzler, N.J., and J.S. Gierke, "Validation of an Unsaturated VOC Transport Model," Proceedings of the 1988 International Conference on Environmental Engineering, American Society of Civil Engineers/Canadian Society of Civil Engineers, pp. 393-400, Vancouver, British Columbia, Canada, July 13-15, 1988. (Presented by Hutzler)
- 41) Gierke, J.S., N.J. Hutzler, and J.C. Crittenden, "Modeling the Movement of Volatile Organic Chemicals with Unsaturated Flow," Proceedings of the 1986 National Conference on Environmental Engineering, pp. 424-430, American Society of Civil Engineers, Cincinnati, Ohio, July 8-10, 1986. (Presented by Gierke)
- 42) Gierke, J.S., N.J. Hutzler, and J.C. Crittenden, "Modeling the Movement of Volatile Organic Chemicals in the Unsaturated Zone," Proceedings of Characterization and Monitoring of the Vadose (Unsaturated) Zone Conference, pp. 352-372, National Water Well Association, Denver, Colorado, November 19-21, 1985. (Presented by Gierke)

### **Selected University Lectures, Special Seminars, Posters, and Invited Presentations**

- 1) Gierke, J.S., "A Unique, Sustainable Undergraduate Educational Approach for Fostering Practical and Research Skills in Hydrogeology," Clemson Hydrogeology Symposium, 30 March 2006, Clemson, South Carolina.
- 2) Beach, D.N., and Gierke, J.S., "Carbon Sequestration in Waste Mineral By-Products," Geology Lecture Series, 11 November 2005, Clemson University, South Carolina.
- 3) Gierke, J.S., "Effectiveness of Enhancements on Air Sparging Performance," Geology Lecture Series, 18 November 2005, Clemson University, South Carolina.
- 4) Sherman, H.M., and J. S. Gierke, "Occurrence of Elevated Uranium Levels in Jacobsville Sandstone Aquifers," Regional Meeting of the American Institute of Mining, Metallurgical, and Petroleum Engineers, Houghton, MI, April 28, 2004 (presented by Sherman).
- 5) Sherman, H.M., and J. S. Gierke, "Occurrence of Elevated Uranium Levels in Jacobsville Sandstone Aquifers," Invited presentation for the U.P. Heath Officials Workshop, Marquette, MI, February 25, 2004 (presented by Gierke).
- 6) Gierke, J.S., and D. N. Beach, "Contaminated Sites: Characterization, Assessment, and Remediation," NSF Workshop on Emerging Geoenvironmental Technologies for Pollution Control and Remediation, University of Illinois—Chicago, Chicago, IL, Sept. 21-23, 2003 (Invited presentation by Gierke)
- 7) Castor, M.G., and J. S. Gierke, "Ozone Sparging of Trichloroethylene in a Pilot-Scale Aquifer" Lecture given at the Tampere University, Tampere, Finland, February 2003 (presented by Gierke).
- 8) "Field-Scale Performance of Air Sparging for Removing a Dense Nonaqueous Phase Liquid from a Aquifer," Lecture given at the Tampere University, Tampere, Finland, February 2003.

## Curriculum Vita for **John S. Gierke**

- 9) "Field-Scale Performance of Air Sparging for Removing a Dense Nonaqueous Phase Liquid from a Aquifer," Lecture given at the University of Oklahoma, February 15, 2002.
- 10) "Field-Scale Performance of Air Sparging for Removing a Dense Nonaqueous Phase Liquid from a Aquifer," Lecture given at Colorado School of Mines, November 17, 2000.
- 11) "Field-Scale Performance of Air Sparging for Removing a Dense Nonaqueous Phase Liquid from a Aquifer," Invited Lecture given at Clemson University, October 3, 2000.
- 12) Gierke, J.S., D.A. Taeye, D.L. Perram, and N.J. Hutzler, "Field-Scale Performance of Air Sparging for Removing a Dense Nonaqueous Phase Liquid from a Aquifer," Dover National Test Site Visitor's Day, Dover Air Force Base, Delaware, 29 August 2000. (Poster presented by Gierke)
- 13) Gierke, J.S., D.L. Perram, N.J. Hutzler, D.A. Taeye, and Mellisa A. Le, "Partitioning Tracer Test for Delineating NAPL Contamination in an Aquifer," Dover National Test Site Visitor's Day, Dover Air Force Base, Delaware, 29 August 2000. (Poster presented by Gierke)
- 14) "Field Testing of Air Sparging," Invited lecture at the University of Delaware, Newark, DE, March 5, 1999.
- 15) "Field Testing of Air Sparging," Invited lecture at Drexel University, Philadelphia, PA, May 13, 1999.
- 16) Gierke, J.S., D.R. Shonnard, and A.S. Mayer, "Integration of In Situ Subsurface Remediation Research into Interdisciplinary Engineering Curricula," Invited Presentation, American Society for Engineering Education Annual Conference in Washington, D.C., June 23-26, 1996. (Presented by Gierke)
- 17) Gierke, J.S., D.R. Shonnard, and A.S. Mayer, "In Situ Subsurface Remediation Technologies: Integration into an Interdisciplinary Engineering Curricula," American Academy of Environmental Engineers (AAEE)/Association of Environmental Engineering Professors (AEEP) Environmental Engineering and Education and Practice Conference, Orono, Maine, August 3-6, 1996. (Poster presented by Gierke)
- 18) "Air Sparging Performance Assessment," Invited Speaker, 19th Midwest Environmental Chemistry Workshop, West Lafayette, Indiana, October 12-13, 1996.
- 19) Sanders, D.L., J.S. Gierke, and D.L. Perram, "Determination of Aqueous Partition Coefficients for Alcohol Tracers Used to Quantify Subsurface Contaminant Volumes," 19th Midwest Environmental Chemistry Workshop, West Lafayette, Indiana, October 12-13, 1996. (Presented by Sanders)
- 20) "Soil Vapor Extraction System Configurations and Process Modeling," Invited Lecture at Rice University, Houston, Texas, September 29, 1995.
- 21) "Soil Vapor Extraction Systems: (1) Modeling Air Flow and VOC Removal, and (2) SVE Enhancements (Steam)," Invited Lectures at a Corrective Action Workshop sponsored by the Department of Engineering Development at the University of Wisconsin--Madison, 1991-1995 (every year, sometime in Feb. or early March)
- 22) Shonnard, D.R., J.S. Gierke, and A.S. Mayer, "In Situ Subsurface Remediation Technologies: Integration into an Interdisciplinary Engineering Curriculum," 1995 ASEE Meeting, Anaheim, California, June 25-28, 1995. (Poster presented by Shonnard)

## Curriculum Vita for **John S. Gierke**

- 23) "The Removal of Volatile Organic Compounds From Clay Soils Using *In Situ* Mixing Coupled with Thermal Extraction," Invited Lecture at Michigan State University, East Lansing, Michigan, September 9, 1993.
- 24) "Organic Chemical Interactions in Clays and Their Removal by Vapor Extraction," Second Forum on NSF Research Activities in Subsurface Systems, Ann Arbor, Michigan, Oct. 7-9, 1992.
- 25) "Modeling the Transport of Volatile Organic Chemicals in Unsaturated Soil and Their Removal by Vapor Extraction," Invited Lecture at Lake Superior State University, Sault Ste. Marie, Michigan, February 8, 1991.
- 26) Cornachione, H.S., J.S. Gierke, and S.D. McDowell, "Fabric Changes in Clays Permeated with Organic Liquids," by 1991 Midwest Symposium of Student Research in Hydrogeology, Northern Illinois University, October 17, 1991. (At this student conference, this student won awards for Best Research Topic and Best Abstract)

### **Non-Peer-Reviewed Reports**

- 1) Gierke, J.S., and C. Wang, "Modeling Thermally Enhanced Vapor Extraction Coupled with *In Situ* Mixing for Remediation of Organically Contaminated, Fine-Grained Soils," *Final Report for Contract No. 19X-SJ598V*, 43 pp., April 1993.
- 2) Crittenden, J.C., D.W. Hand, D.L. Perram, J.S. Gierke, S. Bhuvendralingham, Gopakumar B., and R. Jayadev, "Development of a Mathematical Model to Evaluate the Operation of the Multifiltration Unit in the Space Station's Drinking Water Treatment System," Final Project Report, Submitted to McDonnell Douglas Space System Co., Huntsville, Alabama, April 1992.
- 3) Auer, M.T., J.S. Gierke, and J.M. Glime, "Acid Rain Effects Associated with Sphagnum in Low-Alkalinity Lakes: Mathematical Modeling," Final Project Report, Submitted to E. Newman, Wisconsin Public Service Corporation, Green Bay, Wisconsin, September 1989.

### **Professional Service**

#### Editorships: Books

*Innovative Subsurface Remediation: Field Testing of Physical, Chemical, and Characterization Technologies*, ACS Symposium Series 725, edited by M.L. Brusseau, D.A. Sabatini, J.S. Gierke, and M.D. Annable, American Chemical Society, Washington, D.C., 299 pp., 1999.

#### Editorships: Journals

2003-2004 Editorial Review Board of *Ground Water Monitoring and Remediation*

#### Book Reviews:

Gierke, J.S., *Automatica* (May 2001) (*Optimal Control of Soil Venting: Mathematical Modeling and Applications*, by H. H. Gerke, U. Hornung, Y. Kelanemer, M. Slodicka and S. Schumacher)

## Curriculum Vita for **John S. Gierke**

### Sessions/Workshops Organized at Professional Meetings:

- 1) Rios-Sanchez, M., J.S. Gierke, K. Durst, C.A. Alonso, and E.L. Gross. "Workshop on Applications of Remote Sensing for Exploration and Characterization of Groundwater Resources," IX Congress on Latin American Hydrogeology, 7 July 2008, Quito, Ecuador.
- 2) Wellhead Protection Interest Group, 2004 Groundwater Exposition, National Ground Water Association, Las Vegas, NV, December 12-15, 2004.
- 3) M.L. Brusseau, D.A. Sabatini, J.S. Gierke, & M.D. Annable, "Field Scale Evaluation of Remediation Technologies," 213th American Chemical Society National Meeting, San Francisco, California, April 13-17, 1997.
- 4) S.E. Powers and J.S. Gierke, "Comprehensive Assessment of In Situ Groundwater Treatment Technologies," at WEFTEC '95 Water Environment Federation, Miami Beach, Florida, October 21-25, 1995.

### Review Panels:

National Science Foundation: SBIR & CAREER (2 times)

State of Alaska Oil Spill Cleanup and Corrective Action Program

Strategic Environmental Research and Development Program

U.S. Department of Energy Environmental Management Science Program

U.S. Department of Agriculture

### Journal Reviewer:

*Environmental Science and Technology, Water Resources Research, Journal of Environmental Engineering, Ground Water Monitoring and Remediation, Journal of Contaminant Hydrology, Journal of Hazardous Materials, Journal of Environmental Quality, Water Resources, Journal of Soil and Sediment Contamination, Journal of Soil Contamination, Environmental Engineering Science, Soil Science Society America Journal, Journal of Engineering Education, Encyclopedia of Analytical Chemistry*

### **Students Advised**

#### Current:

*Ph.D. Candidate in Engineering (Environmental Engineering)*

\*Fuchs, Valerie J.

*Ph.D. Student in Geological Engineering*

Rios-Sanchez, Miriam

*Ph.D. Student in Mechanical Engineering*

\*\*Hutchins, Margot J.

*M.S. Geology*

Benjakul, Rengroj

Fish, Randall E., Masters International/Peace Corps (Tanzania)

Hegemann, Robert F., Masters International/Peace Corps (Honduras)

Jenson, Jeremy M., Masters International/Peace Corps (Benin)

## Curriculum Vita for **John S. Gierke**

### *M.S. Environmental Engineering*

Kucharski, Matthew J., Masters International/Peace Corps (Philippines)

### *M.S. Civil Engineering*

Fader, Caleb, Masters International/Peace Corps (Uganda)

Shonsey, Cara W., Masters International/Peace Corps (Mali)

Smith, Gwynneth, Masters International/Peace Corps (Suriname)

### Graduated:

### *Ph.D. Geological Engineering*

Huntzinger, Deborah N. (post-doctoral fellow, University of Michigan)

### *Ph.D. Geology*

Sherman, Heidi M. (Part-Time Instructor University of Hawaii, Consultant)

### *Ph.D. Engineering (Environmental)*

\*\*Hein, Gretchen L. (Lecturer, Michigan Technological University)

\*\*Wojick, C.L. (Senior Research Engineer, Michigan Technological University)

### *M.S. Geological Engineering*

Aho, Robert S. (Engineer, Natural Resources Conservation Service)

Bruning, Jill N. (presently seeking employment)

Carpenter, Michael D. (Engineer, STS Consultants)

Castor, Meaghan G. (Engineer, URS Corporation)

Ebsch, Jeffrey L. (Engineer, U.P. Engineering and Architectural Associates)

Kremer, Theodore J. (Engineer, Malcolm Pirnie, Inc.)

Sanders, Deborah L. (Engineer, ERM-West)

Sawall, Richard H. (Engineer, Geotrans)

Schmunk, Steven W. (System Administrator, Marquette Intermediate School District)

Stright, Lisa E. (Doctoral Student, Stanford University)

Wang, Congli (Engineer, consulting)

### *M.S. Geology*

Anderson, Cecilia P. (Hydrogeologist, ERM)

Gross, Essa L., Masters International/Peace Corps (Nicaragua) (Project Coordinator, Michigan Technological University)

Gu, Yingxin (Research Scientist, U.S.G.S.)

Harrison, Elizabeth A. (Research Scientist, U.S. DOE Los Alamos)

\*\*Keating, Gordon N. (Research Scientist, U.S. DOE Los Alamos)

\*\*Van Antwerp, Darby J. (MS at Clemson University, currently Engineer, RMT)

### *M.S. Civil & Environmental Engineering*

\*\*Bachmann, Nancy-Jeanne (Engineer, Emmons & Olivier Resources, Inc.)

Johnstone, Tammi L. (Engineer, URS Corporation)

Muraski, Jennifer M. (Engineer, Montgomery Watson)

Myre, Elizabeth A. (Water & Sanitation Program Manager, ACTED-Haiti)

Taege, Deborah A. (Engineer, AMEC)

\*initially served as co-advisor, but primary advisor has left Michigan Tech. Even though we both serve as co-advisors, and I am primary

\*\*served as co-advisor (secondary) on research and dissertation/thesis