CURRICULUM VITAE

THOMAS BORCH

Present Positions and Contact Information:

Assistant Professor
Environmental Chemistry
C-108 Plant Sciences Building
Department of Soil and Crop Sciences
Joint Position in Department of Chemistry
Colorado State University
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Education:

Postdoctoral Scientist, Soil and Environmental Biogeochemistry, *Stanford University*, Jan 2004 – Jan 2006. Research Topics: Biogeochemical Cycling of Iron, Nutrients and Trace Metals. Mentor: Dr. Scott Fendorf.

Ph.D., Environmental Soil Chemistry, *Montana State University*, December 2003.
Dissertation: Chromatographic, Spectroscopic and Microscopic Analyses Reveal the Impact of Iron Oxides and Electron Shuttles on the Degradation Pathway of 2,4,6-Trinitrotoluene (TNT) by a Fermenting Bacterium. Advisor: Dr. William P. Inskeep

M.Sc., Environmental Chemistry, *University of Copenhagen*, December 1999.
Thesis: Degradation of Volatile Chlorinated Aliphatics in Unsaturated Soils. Advisor: Dr. Bo Svensmark.

B.Sc., Environmental Chemistry, *University of Copenhagen*, October 1997.
Thesis: The Quantitative and Qualitative Impact of DOC on Nitrate Removal in Wetlands. Advisor: Dr. Bo Svensmark.

Professional History:

Aug 2007 –
Joint Appointment as Assistant Professor
Environmental Chemistry
Department of Chemistry
Colorado State University, USA

Mar 2006 –
Assistant Professor
Environmental Soil Chemistry
Department of Soil and Crop Sciences
Colorado State University, USA

Aug 2005 – Mar 2006
Affiliate Faculty Member
Department of Soil and Crop Sciences
Colorado State University, USA

Jan 2004 – Jan 2006
Postdoctoral Fellow
Soil and Environmental Biogeochemistry Group
Stanford University
Mentor: Dr. Scott Fendorf

Jul 2001
Berkeley-Stanford Summer School in Synchrotron Radiation
UC Berkeley, California, USA

Dec 1999 – Dec 2003
Ph.D. Student, Research and Teaching Assistant
Center for Biofilm Engineering and Department of Environmental Sciences at Montana State University

Aug 1998 – Dec 1999
Graduate Researcher
Department of Plant Biology and Biogeochemistry
Risø National Laboratory, Denmark
Supervisor: Dr. Christian Grøn

Sep 1997 – Dec 1999
Graduate Student
Laboratory of Molecular Spectroscopy, Department of Chemistry, University of Copenhagen, Denmark
Advisor: Prof. Bo Svensmark

Oct 1996 – Jul 1997
Undergraduate Researcher
Freshwater Biological Laboratory
University of Copenhagen, Denmark
Supervisor: Prof. Mogens R. Flindt

Aug 1993 – Sep 1997 **Undergraduate Student and Student Advisor**
Department of Chemistry
University of Copenhagen, Denmark
Advisor: Prof. Bo Svensmark

Honors and Awards:

Colorado State University, College of Agricultural Sciences "$3000 Graduate Signing Bonus Award" for Robert B. Young (2007)

Jenny M. Jones (chemistry major; work-study in my lab) Awarded 2nd place in the American Society of Agronomy Undergraduate Research Symposium Contest (2006; see platform presentations below)

Colorado State University, College of Agricultural Sciences "$3000 Graduate Signing Bonus Award" for Catherine Simpson (2006)

Postdoctoral Fellowship at Stanford University (2004 – 2006)

Empire Who's Who Among Executives and Professionals (2006)

Keating, K., Knight, R., Borch, T. Recipient of a 2005 AGU Outstanding Student Paper Award (see details in poster section below; 2005)

Inland Northwest Research Alliance Graduate Fellowship, $36000 $year^{-1}$ (2003)

W.G. Characklis Award - Outstanding Ph.D. Candidate. Given for outstanding research work, interaction with industry, and dedication to the Center for Biofilm Engineering (2003)

Awarded 1st place for best poster at the First Annual INRA Subsurface Science Symposium, September 6-7, 2001, Idaho Falls, Idaho (see also abstracts; 2001)

Louis Pasteur Academic Scholarship (2000)

University of Copenhagen, Department of Chemistry, Student Travel Award for Battelle's In Situ and On-Site Bioremediation Symposium, San Diego, CA (1999)

Teaching and other Research Related Qualifications:

My Research Group:

- Robert B. Young, Ph.D. Student (2007 -). Photolysis of Steroid Hormones.
- Jens Blotevogel, Ph.D. Student (2007 -). Thermodynamic Modeling of Contaminant Fate in Natural and Engineered Systems.

- Catherine R. Simpson, Ph.D. Student (2006 -). Fate and Transport of Steroid Hormones from Animal Feedlots and Sewage Treatment Plants.

Former Research Group Members:

- Jennifer M. Jones, Chemistry Major - Work-Study (Honors Student/Thesis; 2006 - 2007). Photolysis of Steroid Hormones. (Currently employed at CHATA Biosystems, Inc. Fort Collins, CO 80524)
- Yared Assefa Mulisa, Graduate Intern from Wageningen University, the Netherlands. (Currently a Ph.D. student at Kansas State University).
- Pilar Montraveta Torrent, Undergraduate Intern from University of Lleida, Spain.

Teaching: Soil and Environmental Chemistry (SC 467) at Colorado State University, Spring 2007 –

Co-Teaching: Environmental Soil Science (SC 478) at Colorado State University, Spring 2007 -

Academic Advisor for 1 Honors Student (Jennifer M. Jones from the Chemistry Department), 2006 - 2007.

Academic advisor for 3 Ph.D. students, 1 master student (intern from Wageningen University), and 3 undergraduate students at CSU, Spring 2006 – present.

Serve as "outside member" on the graduate committee of John Deery (Ph.D., Dept. of Geosciences; Fall 2006 - present), Élan Alford (Ph.D., graduate program in Ecology; Spring 2007 - present), Natalie King (M.S., Dept. of Geosciences; Spring 2007 - present).

Co-mentor for Ph.D. students in Dr. Scott Fendorf's research group at Stanford University, 2004 - 2006

Mentor for Danny Richter (summer intern at Stanford University; now a Ph.D. student at Scripps Institute of Oceanography), 2004.

Assistant teacher in a civil engineering graduate class: *Groundwater Contamination*, spring 2002

Chairman (seminar coordinator) for the seminar series at the Center for Biofilm Engineering, 2001 – 2003

Advisor on three undergraduate research projects (Kristian Paul (LRES; now a Ph.D. student in D.L. Sparks lab. at U of Delaware), Eric Harrison (CE) and Jace Harwood (ChE)), 2001 – 2002

Mentor for six undergraduate research students and one master student at MSU, 2000 – 2003.

Professional Activities:

Peer Reviewer for the Following National Laboratories, Funding Agencies, Journals, and Book publishers

National Laboratories:
Serving on a standing Environmental Molecular Sciences Laboratory (EMSL) Peer Review Committee. Review of user research proposals for the scientific research at EMSL at the Pacific Northwest National Laboratory (PNNL) which is operated by Battelle for the U.S. Department of Energy.

Funding Agencies:
The National Science Foundation (NSF)

Journals:
Achieves of Environmental Contamination and Toxicology
Chemosphere
Clays and Clay Minerals
Environmental Science and Technology
Environmental Engineering Science
Geochimica et Cosmochimica Acta
Geomicrobiology Journal
Journal of Chromatography
Journal of Environmental Quality
Science of the Total Environment
Soil Science
Soil Science Society of America Journal
Soil & Sediment Contamination: an International Journal

Book Publishers:
Blackwell Publishing
Elsevier

Membership in Scientific Societies

Soil Science Society of America, 2005 – present
The Geochemical Society, 2004 – present
American Geophysical Union, 2002 – present
The American Chemical Society, 2002 – present
The Danish Chemical Society, 2000 – present
The Danish Pasteur Society, 1999 – present

Publications in Peer-Reviewed Books, Journals and Conference Proceedings:

PH.D. DISSERTATION:

Borch, T. Chromatographic, Spectroscopic and Microscopic Analyses Reveal the Impact of Iron Oxides and Electron Shuttles on the Degradation Pathway of 2,4,6-Trinitrotoluene (TNT) by a Fermenting Bacterium. Montana State University, **2003**.

BOOK CHAPTERS:

IN PRESS (1):

Borch, T., Fendorf, S. Phosphate Interactions with Iron (Hydr)oxides: Mineralization Pathways and Phosphorus Retention Upon Bioreduction. In *Adsorption of Metals by Geomedia II: Variables, Mechanisms, and Model Applications*; 1 ed.; Kent, D. B., Barnett, M. O., Eds.; Elsevier: The Netherlands, **2008**; Vol. 7, pp 325-346.

JOURNAL ARTICLES:

IN PREPARATION (6):

Borch, T., Fendorf, S. Influences of Iron Reductive Transformations on Phosphate Cycling. *Soil Science Society of America Journal*. Internal Review **200_**.

Borch. T., Biederman, J.A., Butterfield, P.W., Amonette, J.E., Gerlach, G., Camper, A.K. Characterization and Comparison of Iron-Pipe Corrosion Products and Synthetic Iron-Oxide-Coatings used for Drinking Water Research. Internal Review **200_**.

Borch, T., Gerlach, R., Inskeep, W.P. Bioreducibility of Fe(hydr)Oxides Governs the Reduction of 2,4,6-Trinitrotoluene by a Fermenting Bacterium. *Journal of Environmental Quality***.** Internal Review **200_**.

Ballor, N.R., **Borch, T.,** Gerlach, 2,4,6-Trinitrotoluene Enhanced Chromate Reduction by a Fermenting Bacterium. *Environmental Science & Technology***.** Internal Review **200**

Benner, S.G., **Borch, T.,** Hansel, C.M., Fendorf, S. Rapid Dissolution of Fe Oxides Supports Bacterial Metabolism While Depressing Contaminant Retention. *Proceedings of the National Academy of Sciences.* Internal Review **200_**.

Sivaswamy, V., Peyton, B.M., Viamajala, S., Gerlach, R., Apel, W.A., Sani, R.K., Dohnalkova, A., **Borch, T.** Dual Mechanisms of Uranium Immobilization by *Cellulomonas* sp. strain ES6. *Environmental Science & Technology***.** Internal Review **200_**.

IN REVIEW (2):

Ziganshin, A.M., Gerlach, R., **Borch, T.,** Naumov, A.V., Naumova, R.P. Production of Eight Different Hydride Complexes and Nitrite Release from 2,4,6-Trinitrotoluene by *Yarrowia lipolytica*. *Applied and Environmental Microbiology*. In Review **2007.**

Moberly, J., Sani, R.K., **Borch, T.,** Sengor, S.S., Ginn, T. Peyton, B.M. Geochemical Characterization of Heavy Metal-Contaminated Sediments in the Coeur d'Alene River Delta. *Science of the Total Environment*. In Review **2007**.

PUBLISHED (8):

Borch, T., Masue, Y., Kukkadapu, R.K., Fendorf, S. Phosphate Imposed Limitations in Biological Reduction and Alteration of Ferrihydrite. *Environmental Science & Technology.* **2007,** *41,* 166-172.

Ginder-Vogel, M.A., **Borch, T.,** Mayes, M., Jardine, P., Fendorf, S. Chromate Reduction and Retention Processes within Hanford Sediments. *Environmental Science & Technology.* **2005**, *39*, 7833-7839.

Borch, T., Inskeep, W.P., Harwood, J.A., Gerlach, R. Impact of Ferrihydrite and Anthraquinone-2,6-Disulfonate on the Reductive Transformation of 2,4,6-Trinitrotoluene by a Gram-Positive Fermenting Bacterium. *Environmental Science & Technology.* **2005,** *39,* 7126-7133.

Borch, T., and Gerlach, R. Use of Reversed-Phase High-Performance Liquid Chromatography – Diode Array Detection for Complete Separation of 2,4,6-Trinitrotoluene Metabolites and EPA M8330 Explosives: Influence of Temperature and an Ion-Pair Reagent. *Journal of Chromatography A.* **2004**, *1022*, 83-94.

Borch, T., Ambus, P., Laturnus, F., Svensmark, B., Grøn, C**.** Biodegradation of chlorinated solvents in a water unsaturated topsoil. *Chemosphere*. **2003**, *51*, 143-152.

Laturnus, F., **Borch, T.,** Haselmann, K.F., Grøn, C. (Hvor Naturlig er Kloroform?) How Natural is Chloroform? *(Vand & Jord) Water & Soil*. (In Danish). **2002**, *9,* 84-88.

Laturnus, F., Haselmann, K.F., **Borch, T.,** Grøn, C. Terrestrial Natural Sources of Trichloromethane (Chloroform, $CHCl_3$) - An Overview. *Biogeochemistry*. **2002**, *60*, 121-139**.**

Holman, H-Y. N., Nieman, K., Sorensen, D.L., Miller, C.D., Martin, M.C., **Borch, T.,** McKinney, W.R., Sims, R.C. Catalysis of PAH Biodegradation by Humic Acid Shown in Synchrotron Infrared Studies. *Environmental Science & Technology*. **2002**, *36,* 1276-1280**.**

PEER-REVIEWED PROCEEDINGS/TRANSACTIONS:

Jones, J.M., **Borch, T.,** Young, R.B., Davis, J.G., Simpson, C.R. Photolysis of testosterone, progesterone, and 17β-estradiol by UVA light In *Emerging Contaminants of Concern in the Environment: Issues, Investigations, and Solutions*; Drewes, J. E., Battaglin, W. A., Kolpin, D. W., Eds.; American Water Resources Association, Middleburg, Virginia,: Vail, Colorado, **2007**; Vol. Proceedings of the AWRA 2007 summer specialty conference, TPS-07-2, CD-ROM (5 pages).

NON-PEER-REVIEWED PROCEEDINGS/TRANSACTIONS:

Archibeque, S.L., **Borch, T.,** Engle, T.E., Wagner, J.J., Han, H. Endocrine Disruptor Residues in Feedlot and Dairy Waste Streams. 68th Minnesota Nutrition Conference and University of Minnesota Research and Update Session: *Modern Concepts in Livestock Production for **2007*** (15 pages).

Platform Presentations (49 in total):

INVITED (21):

Borch, T., Gerlach, R., Peyton, B.M. Fendorf, S. Identification of Biogeochemical Mechanisms Controlling the Fate of Uranium, Phosphate, and 2,4,6-Trinitrotoluene. June 17-20, **2007.** 62nd NORM Meeting of the American Chemical Society in Boise Idaho, USA.

Borch, T., Biogeochemical Cycling of Iron: Interactions of Nutrients and Contaminants from Atoms to Planets. June 5th, **2007**. Center for Applied Geoscience (ZAG), Eberhard-Karls-University Tuebingen, Germany.

Borch, T. Fate of Pharmaceuticals, Nutrients and Explosives in the Environment. Department of Chemistry Seminar, April 27th, **2007**. Colorado State University, CO.

Borch, T. The Environmental Fate of Steroid Hormones from Animal Feeding Operations. Department of Animal Sciences Seminar, April 3rd, **2007**. Colorado State University, CO.

Borch, T. Phosphate Interactions with Iron (Hydr)oxides: Mineralization Pathways and Phosphorus Retention Upon Bioreduction. Department of Bioagricultural Sciences and Pest Management Seminar, March 28th, **2007**. Colorado State University, CO.

Borch, T. Fate of Pharmaceuticals, Nutrients and Explosives in the Environment. Gamma Sigma Delta Seminar, November 29th, **2006**. Colorado State University, CO.

Borch, T. Iron (hydr)oxide Biomineralization: Interactions of Oxyanions and Nitroaromatics. Department of Chemistry and Geochemistry Seminar, September 29th, **2006**. Colorado School of Mines, Golden, CO.

Borch, T. Ferrihydrite Biomineralization: Interactions of Oxyanions and Nitroaromatic Compounds. Telluride Science Research Center Workshop: Iron Redox Chemistry at Environmentally Relevant Surfaces, July 25-28, **2006**, held in Telluride, CO.

Sani, R., Moberly, J., Parveen, R., Barua, S., Sengor, S., Peyton, B., Ginn, T., **Borch, T.,** Spycher, N. The diversity of microorganisms and their interactions with toxic metals in sediments of Lake Coeur d'Alene. INRA Subsurface Biotechnology and Bioremediation Symposium and Workshop. June 22 – 23, **2006**. Center for Biofilm Engineering, Montana State University, MT,

Borch, T., Fendorf, S. Phosphate adsorption on iron oxides: Impact on reductive biomineralization. March 26-30, **2006**. The 231st American Chemical Society (ACS) National Meeting, Atlanta, GA, USA.

Borch, T. Phosphate Dynamics Upon the Biomineralization of Iron Oxides. February 3, **2006**. The Royal Agricultural University of Denmark.

Borch, T. Biogeochemical Cycling of Iron: Interactions of Nutrients and Contaminants from Atoms to Planets. May 13, **2005**. Stanford Environmental Molecular Science Institute's (EMSI) Seminar Series.

Borch, T. Biogeochemical Cycling of Iron: Interactions of Nutrients and Contaminants from Atoms to Planets. April 27, **2005**. Department of Soil and Crop Sciences at Colorado State University.

Borch, T. Role of Microbes and Oxyanions in Iron Mineralization Processes Studied by X-ray Absorption Spectroscopy (XAS) and Soft X-ray Spectromicroscopy (STXM). March 31, **2005**. Center for Biofilm Engineering at Montana State University.

Borch, T. Biogenic Iron Mineralization by a Novel Gram-Positive: Impact on the Fate of 2,4,6-Trinitrotoluene (TNT). May 16, **2003**. Departments of Earth and Planetary Science and Environmental Science, Policy, and Management, University of California Berkeley.

Borch, T. Biomineralization of Iron(III)Minerals by a Novel Gram-Positive Bacterium in the Presence and Absence of the Humic Analog AQDS: Impact on the Fate of 2,4,6-Trinitrotoluene. February 25th, **2003**. Department of Geological and Environmental Sciences, Stanford University, USA.

Borch, T. Biogenic Iron Mineralization by a Novel Gram-Positive Bacterium Isolated at the PNNL's Hanford Site: Impact on the Transformation of 2,4,6-Trinitrotoluene. February 14th, **2003**. The William R. Wiley Environmental Molecular Sciences Laboratory (EMSL), Pacific Northwest National Laboratory (PNNL) in Richland, Washington, USA.

Borch, T. Influence of Biogenically Produced Fe(II), Electron Shuttling, and Humic Acid on the Fate of 2,4,6-trinitrotoluene (TNT). December 19th, **2002**. Department of Chemistry, Lund University, Sweden.

Borch, T. and Holman, H-Y. N. Biodegradation Studies of PAH and TNT *at the Molecular Level* by Synchrotron Radiation-Based Infrared Spectromicroscopy. July 23-25, **2002.** Technical Advisory Conference, Center for Biofilm Engineering at Montana State University – Bozeman.

Borch, T., Biederman, J.A., Mogk, D.W., Butterfield, P.W., Camper, A.K., Jordan, R.N. Characterization of Two Iron Oxide Models for Environmental Research: Microscopic and Spectroscopic Studies. April **2002.** Center for Biofilm Engineering Seminar Series at Montana State University – Bozeman.

Borch, T., Walker, D.K., Jordan, R.N. Bioavailability of 2,4,6-Trinitrotoluene (TNT) as a Result of Biofilm-Induced Changes to Soil Organic Matter Structure. July 24-25, **2001.** Technical Advisory Conference, Center for Biofilm Engineering at Montana State University – Bozeman.

VOLUNTEERED (28):

Borch, T., Young, R.B., Jones, J.M., Davis, J.G., Simpson, C.R. Degradation of Steroid Hormones in the Environment. The ASA-CSSA-SSSA International Annual Meetings November 4-8, **2007**, New Orleans, LA.

Young, R.B., **Borch, T.** Impact of Photolysis and Photosensitizers on the Fate of 17β-Estradiol, Progesterone and Testosterone. American Chemical Society 20th Rocky Mountain Regional Meeting - Chemistry and Engineering for Sustainability. August 29 - September 1, **2007**, Denver, CO.

Borch, T., Davis, J.G., Simpson, C.R., Young, R.B., Jones, J.M. Impact of Photolysis and Manure-Borne Bacteria on the Fate of Steroid Hormones. The AWRA Summer Specialty Conference on *Emerging Contaminants of Concern in the Environment: Issues, Investigations and Solutions*, June 25-27, **2007**, Vail Cascade Resort & Spa, Vail, CO.

Borch, T., Assefa Mulisa, Y., Ippolito, J.A., Hansen, N.C., and Jones, J.M.. Fate and Transport of Phosphorus in Biosolids and Water Treatment Residuals Amended Soils under Anaerobic Conditions. The ASA-CSSA-SSSA International Annual Meetings November 12-16, **2006,** Indianapolis, IN.

Jones, J.M., **Borch, T.,** Hansen, N.C., Davis, J.G., and Simpson, C.R. Photodegradation of Manure-Borne Steroid Hormones. The ASA-CSSA-SSSA International Annual Meetings November 12-16, **2006,** Indianapolis, IN. **(Won 2nd place in the American Society of Agronomy Undergraduate Research Symposium Contest).**

Sani, R., Moberly, J., Parveen, R., Barua, S., Sengor, S., Peyton, B., Ginn, T., **Borch, T.,** Spycher, N. The Diversity of Microorganisms and Their Interactions with Toxic Metals in Sediments of Lake Coeur d'Alene. INRA Environmental & Subsurface Science Symposium, September 24-27, **2006**, Seattle, WA.

Masue, Y., **Borch, T.,** Kocar, B., Fendorf, S. Arsenic Attenuation Upon Bioreduction of Ferrihydrite. The 19th General Meeting of the International Mineralogical Association, July 23-28, **2006**, Kobe, Japan

Borch, T., Masue, Y., Fendorf, S. Impact of Phosphate on Iron Oxide Bioreducibility and Mineralization. Paper #158-18. The 18th World Congress of Soil Science, July 9-15, **2006**, Philadelphia, PA

Masue, Y., **Borch, T.,** Kocar, B., Fendorf, S. Arsenic Attenuation upon Bioreduction of Ferrihydrite. The 18th World Congress of Soil Science, July 9-15, **2006**, Philadelphia, PA

Kocar, B., Masue, Y., Tufano, K., Ying, S., Polizzotto, M., **Borch, T.,** Fendorf, S. Iron (Hydr)oxide Transformation and Release of Arsenic From Ferrihydrite and Tropical Soils During Sulfate Reduction. The 18th World Congress of Soil Science, July 9-15, **2006**, Philadelphia, PA

Masue, Y., **Borch, T.,** Fendorf, S. Factors Affecting Arsenic Retention Under Anaerobic Conditions. 4th International Symposium of the Kanazawa University 21st-Century COE Program, Promoting Environmental Research in Pan-Japan Sea Area, March 8-10, **2006**, Kanazawa, Japan

Borch, T., Masue, Y., Kocar, B., Fendorf, S. Phosphate Dynamics Upon the Biomineralization of Iron Oxides. November 6 - 10, **2005.** ASA-CSSA-SSSA International Annual Meetings, Salt Lake City, UT.

Kocar, B.D., **Borch, T.,** Fendorf, S. Release of Arsenic and Transformation of Iron (Hydr)Oxides During Sulfidogenesis. November 6 - 10, **2005.** ASA-CSSA-SSSA International Annual Meetings, Salt Lake City, UT.

Masue, Y., **Borch, T.,** Fendorf, S. Arsenic Retention on Ferrihydrite: Stability Under Aerobic and Anaerobic Conditions. November 6 - 10, **2005.** ASA-CSSA-SSSA International Annual Meetings, Salt Lake City, UT.

Ginder-Vogel, M., **Borch, T.,** Fendorf, S. Reduction and Retention Processes Within Arid Subsurface Environments. September 19-21, **2005.** Synchrotron Environmental Science III. Brookhaven National Laboratory, Upton, New York.

Kocar, B.D., **Borch, T.,** Fendorf, S. Sulfidogenesis controls on iron (hydr)oxide transformation and release of arsenic. August 28 – September 1, **2005**. The 230th American Chemical Society National Meeting. Washington, DC, USA.

Borch, T., Masue, Y., Kocar, B., Fendorf, S. Poisoning of the Biogeochemical Cycle of Iron by Surface Compositional Changes. August 14 – 19, **2005**. The Joint International Symposia for Subsurface Microbiology (ISSM 2005) and Environmental Biogeochemistry (ISEB XVII**).** Abstract p. 28. Jackson Hole, Wyoming, USA.

Gerlach, R., **Borch, T.,** Ballor, N.R., Cunningham, A.B., Peyton, B.M., Apel, W.A. Fermenters and Reductive Contaminant Transformation Processes in the Subsurface. August 14 – 19, **2005**. The Joint International Symposia for Subsurface Microbiology (ISSM 2005) and Environmental Biogeochemistry (ISEB XVII**).** Abstract p. 29. Jackson Hole, Wyoming, USA.

Yoon, T.H., **Borch, T.,** Benzerara, K., Fendorf, S., Tyliszczak, T., Brown, Jr., G.E. Soft X-ray Spectromicroscopy Study on Chemical Heterogeneities in Iron Precipitates Formed at or Near Bacterial Cells. May 20-25, **2005.** Goldschmidt Geochemistry Conference. Moscow, Idaho. Geochimica et Cosmochimica Acta, *69* (10), A598.

Ginder-Vogel, M., **Borch, T.,** Fendorf, S. Reduction and Retention Processes Within Arid Subsurface Environments. May 20-25, **2005.** Goldschmidt Geochemistry Conference. Moscow, Idaho. Geochimica et Cosmochimica Acta, *69* (10), A619.

Borch, T., Inskeep, W.P., Gerlach, R. Iron (Hydr)Oxides and Electron Shuttles Govern the Fate of 2.4.6-Trinitrotoluene by a Soil Bacterium. June 5-11, **2004.** Goldschmidt Geochemistry Conference. Copenhagen, Denmark. Geochimica et Cosmochimica Acta, *68* (11), A451.

Gerlach, R., **Borch, T.,** Cunningham, A.B., Viamajala, S., Peyton, B.M., Apel, W.A. Influence of Electron Shuttling Compounds and Iron Minerals on the Reduction of Metals and Organics. May 24-27, **2004.** 4th International Conference on Remediation of Chlorinated and Recalcitrant Compounds, Monterey, California, USA.

Borch, T. Iron(III)Minerals Can Impact the Microbial Reduction of 2,4,6-Trinitrotoluene. October 5-8, **2003**. The Third Annual INRA Subsurface Science Symposium, Salt Lake City, Utah, USA.

Gerlach, R., **Borch, T.,** Cunningham, A.B., Viamajala, S., Peyton, B.M., Apel, W.A. Influence of Electron Shuttling Compounds on the Reduction of Metals and Organics. October 5-8, **2003**. The Third Annual INRA Subsurface Science Symposium, Salt Lake City, Utah, USA.

Borch, T., Cunningham, A.B., Gerlach, R. 2,4,6-Trinitrotoluene (TNT) Biodegradation By a Novel Gram-Positive Iron-Reducing Bacterium. June 2-5, **2003.** In Situ and On-Site Bioremediation. The Seventh International Symposium, Orlando, Florida, USA.

Gerlach, R., **Borch, T.,** Cunningham, A.B. Biofilm-Based Technologies for Mixed-Waste Remediation. April 27-30, **2003**. U.S. Army Research Office Workshop. High Hampton Inn. Cashiers, North Carolina, USA.

Borch, T., Gerlach, R., Cunningham, A.B., Peyton, B.M., Apel, W.A. Influence of Biogenically Produced Fe(II) and Humic Acid Analogs on the Fate of 2,4,6-trinitrotoluene (TNT). (December 6-10, 2002. Fall Meeting, American Geophysical Union, San Francisco, California). *Eos Trans. AGU, 83*(47), Fall Meet. Suppl., Abstract B22E-11, **2002**.

Borch, T., Biederman, J.A., Mogk, D.W., Butterfield, P.W., Camper, A.K., Jordan, R.N. Characterization of Two Iron Oxide Models for Environmental Research: Microscopic and Spectroscopic Studies. October 13-16, **2002.** The Second Annual INRA Subsurface Science Symposium, Boise, Idaho.

Poster Presentations and other Abstracts (28 in total):

INVITED (1):

Borch, T., Tufano, K.J., Fendorf, S. Surface and Substrate Modifications of Ferrihydrite Stability. October 31 – November 4, **2004**. ASA-CSSA-SSSA International Annual Meetings, Seattle, Washington.

VOLUNTEERED (27):

Jones, J.M., **Borch, T.,** Davis, J.G., Young, R.B., Simpson, C.R. Photolysis of Testosterone: Kinetics and Degradation Products. The AWRA Summer Specialty Conference on *Emerging Contaminants of Concern in the Environment: Issues, Investigations and Solutions*, June 25-27, **2007**, Vail Cascade Resort & Spa, Vail, CO.

Simpson, C.R., **Borch, T.,** Davis, J.G., Jones, J.M. Fate of Testosterone in Manures from Various Livestock. The AWRA Summer Specialty Conference on *Emerging Contaminants of Concern in the Environment: Issues, Investigations and Solutions*, June 25-27, **2007**, Vail Cascade Resort & Spa, Vail, CO.

Borch, T., Masue, Y., Fendorf, S. Impact of Phosphate on Iron Oxide Bioreducibility and Mineralization. The 18th World Congress of Soil Science, July 9-15, **2006**, Philadelphia, PA, USA

Masue, Y., **Borch, T.,** Kocar, B., Fendorf, S. Arsenic Attenuation upon Bioreduction of Ferrihydrite. The 18th World Congress of Soil Science, July 9-15, **2006**, Philadelphia, PA, USA

Peyton, B.M., Gerlach, R., Apel, W., Sivaswamy, V., Smith, W., Newby, D., Roberto, F., Viamajala, S., Barnes, J., **Borch, T.** Reductive Transformation of Metals and

Organics by Gram Positive Environmental Isolates of the Genus Cellulomonas. The American Society for Microbiology 106th General Meeting in the Orange County Convention Center in Orlando, FL from May 21-25, **2006**.

Moberly, J., Sani, R.K., Peyton, B.M., **Borch, T.,** Ginn, T., Taylor, C. Microbial Diversity and Geochemistry in Heavy Metal Contaminated Sediments. The American Society for Microbiology 106th General Meeting in the Orange County Convention Center in Orlando, FL from May 22-26, **2006**.

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