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EDUCATION

Ph.D.	Civil Engineering	Princeton University, Princeton, New Jersey	1983
M.A.	Civil Engineering	Princeton University, Princeton, New Jersey	1980
M. S.	Civil Engineering	Princeton University, Princeton, New Jersey	1979
B.S.	Civil Engineering	Drexel University, Philadelphia, Pennsylvania	1976

(highest honors)

PROFESSIONAL EXPERIENCE

Brown University	Joan Wernig and E. Paul Sorensen Professor of Engineering	2021-
	Affiliate Faculty, Institute at Brown for Environment and Society	2021-
Tufts University	University Professor	2015-2020
	Director, Tufts Institute of the Environment	2016-2020
	Dean of Engineering	2003-2015
	Professor of Civil and Environmental Engineering	2003-2020
	Adjunct Professor of Chemical and Biological Engineering	2003-2020
	Adjunct Professor of Civil and Environmental Engineering	2021-
The University of Michigan, Ann Arbor	Professor of Chemical Engineering	2003
	Horace Williams King Collegiate Professor of Environ Engineering	2001-03
	Director, Environ and Water Resources Engineering Program	1996-2001
	Professor of Civil and Environmental Engineering	1996-2003
	Associate Professor of Civil and Environmental Engineering	1990-96
	Assistant Professor of Civil Engineering	1984-90
Universitat Politecnica de Cataluña, Barcelona, Spain	Visiting Scientist, Department of Geotechnical Engineering	1992
The University of Texas at Austin	Visiting Associate Professor, Department of Petroleum Engineering	1991
Princeton University	Post-Doctoral Researcher, William G. Gray, Research Supervisor	1983-84
	Research and Teaching Assistant, George F. Pinder, Thesis Advisor	1979-83

Procter and Gamble Project Engineer
Manufacturing
Company,
Staten Island, NY

1976-78

HONORS AND AWARDS

Elected Fellow, American Association for the Advancement of Science, 2022

Prince Sultan Bin Abdulaziz International Water Prize – Ground Water, 2022

Drexel University Alumni Association Award for Service to the Profession, 2022

InterPore Rosette Award for significant contributions to InterPore activities, 2021

Named Joan Wernig and E. Paul Sorensen Professor of Engineering, Brown University, 2021

Named U.S. State Department Science Envoy, February 2016

Cullen College Elizabeth Rockwell Distinguished Lecture, University of Houston, 2016

2015 Chemical Engineering Distinguished Lecture Series, University of Utah

Named University Professor, Tufts University, 2015

2014 CEE Annual Distinguished Lecture Series at Northwestern University

2013 Engineering Leader of the Year Award, Drexel University

2012 SERDP Environmental Restoration Project of the Year Award

The Power List, *CE News*, 2011

Annual Distinguished Ryckman Lecture, Washington University, 2011

Listed in encyclopedia *American Women of Science since 1900*, 2010

Charles & Mary O' Melia Lecture in Environmental Sciences, Johns Hopkins University, 2010

2008 CESEP Distinguished Lecture, Colorado School of Mines

2006 SERDP Environmental Restoration Project of the Year Award

Elected to the American Academy of Arts and Sciences, 2006

Lichtenstein Distinguished Lecture, Ohio State University, 2006

Distinguished Lecturer for Georgia Institute of Technology Lecture Series, 2004

Elected to the National Academy of Engineering, 2003

ISI Highly Cited Author in Ecology/Environment, 2002

Inaugural Endowed Lecture of the Drexel University Civil Engineering Alumni Faculty Lecture Series, 2002

Horace Williams King Collegiate Professorship (UM College of Engineering), 2001

Elected Fellow of the American Geophysical Union, 2000

College of Engineering Teaching Excellence Award, The University of Michigan, 1998

1997 Excellence in Service Award, Department of Civil and Environmental Engineering, The University of Michigan

Outstanding Educator Award, Association for Women Geoscientists, 1996

Distinguished Darcy Lecturer, National Groundwater Association, 1996

College of Engineering Research Excellence Award, The University of Michigan, 1994

Research Partnership Program Award, The University of Michigan, 1992

Visiting Scientist's Grant, Spanish Ministry of Education and Science, 1992

Recipient, National Science Foundation Faculty Award for Women Scientists and Engineers, 1991
 Republic Bank Corp. Centennial Professorship in Petroleum Engineering, The University of Texas at Austin, 1991
 Recipient, Class of 1938E Distinguished Service Award to Outstanding Members of the Engineering Faculty, The University of Michigan, 1988
 Recipient, National Science Foundation Presidential Young Investigator Award, 1985
 Vsevolod Blinoff Environmental Graduate Scholarship, 1979
 Shell Oil Fellowship, 1978
 Outstanding Senior Award, Drexel University Alumni Association, 1976

PROFESSIONAL ACTIVITIES (* current)

American Academy of Arts and Sciences	<i>Invited participant, Exploratory Meeting, "Water in Our Future"</i>	June 2019
National Academy of Engineering	<i>Member, Sec 4 Ad Hoc Committee on Peer Committee Process and Evaluation Criteria</i>	2021-22
	<i>Member, Section 4 Peer Committee</i>	2017-19
	<i>Vice Chair (2018); Chair (2019)</i>	
	<i>Elected Member, NAE Council (NAE governing Board)</i>	2007-13
	<i>Member, NAE Fund Audit Committee</i>	2009-15
	<i>Member, Gordon Prize Committee</i>	2009-11
	<i>Member, NAE Awards Committee</i>	2007-09
	<i>Chair</i>	2008
National Academies and National Research Council Committees	<i>Member, Section 4 Peer Committee</i>	2005-07
	<i>Vice-Chair (2006); Chair (2007)</i>	
	<i>Member, Offshoring Engineering Workshop Committee</i>	2006
	<i>Member, Division Committee on Engineering and Physical Sciences</i>	2013-18
	<i>Member, Committee on Science, Engineering, and Public Policy</i>	2010-16
	<i>Member, Enhancing the Teacher Voice in Policy Making Related to Implementation of K-12 Engineering Education Planning Committee</i>	2016
	<i>Member, Integrated STEM Education Committee</i>	2011-13
	<i>Member, Committee on Gender Differences in Careers of Science, Engineering, and Mathematics Faculty</i>	2004-07
National Academies and National Research Council Committees	<i>Member, Committee on Source Removal of Contaminants in the Subsurface</i>	2002-04
	<i>Member, Water Science and Technology Board</i>	1994-97
	<i>Member, Committee on Groundwater Clean-up Alternatives</i>	1991-94

National Science Foundation	<i>Member, Assistant Director for Geosciences Search Committee</i>	2021
	<i>Co-Chair, Committee of Visitors review of CBET Division</i>	May 2015
	<i>Member, Engineering Directorate Advisory Committee</i>	2010-2013
	<i>Review Panel Member, Consortium of Universities for the Advancement of Hydrologic Sciences (CUAHSI)</i>	2008
	<i>Member, Assistant Director for Engineering Directorate Search Committee</i>	2008
	<i>Organizing Committee, Workshop on Frontier Research Directions in Civil & Environmental Engineering</i>	June 2007
	<i>Invited Panel Member, NSF Women in Engineering Leadership Conference, Cocoa Beach, FL</i>	Apr 2005
	<i>Moderator, NSF Women's Leadership Conference</i>	Nov 2000
	<i>Participant, NSF Workshop on Research in Environmental Geochemistry and Biogeochemistry</i>	May 1994
	<i>Co-Chair, October 7-9, Second Forum on NSF Research Activities in Subsurface Systems, held at The University of Michigan, Ann Arbor</i>	1992
	<i>Member, NSF Environmental Engineering Review Panel VII</i>	July 1987
	<i>Member, NSF UCLA Hazardous Waste ERC Site Review Team</i>	Mar 1989
	<i>Co-Chair, July 23-25, Forum on NSF Research Activities in Subsurface Systems, held at The University of Michigan, Ann Arbor</i>	1986
	United States Department of State	<i>U.S. Science Envoy – “to develop partnerships, improve collaboration, and forge mutually beneficial relationships related to science and economic issues between other nations and the US, with emphasis on women in STEM and water resource engineering in South and Central Asia.”</i>
United States Environmental Protection Agency	<i>Organizer, Combined Remedies Workshop, co-sponsored by NIEHS and Tufts University</i>	June 2006
	<i>Member, DNAPL Source Zone Remediation Expert Panel</i>	2001-03
	<i>Invited Speaker, DNAPL Source Remediation Workshop, Dallas, TX, Oct. 29-30</i>	2001
	<i>Member, EPA CMPLT Review Subcommittee</i>	1995-96
	<i>Member, HWIR Review Subcommittee</i>	1995-96
	<i>Chair, SAB/EEC Modeling Project Subcommittee</i>	1993-96
	<i>Member, Science Advisory Board Environmental Engineering Committee</i>	1991-96
	<i>Core Consultant</i>	1990-91
	<i>Member, May 28-29, Robert S. Kerr Research Laboratory Facilitated Transport Peer Review Panel</i>	1987

United States Department of Energy	<i>Invited Participant</i> , Environmental Remediation Sciences Division 2nd Strategic Planning Workshop	Sept 2002
	<i>Member</i> , NABIR (Natural and Accelerated Bioremediation Research) Advisory Committee	2000-02
United States Department of Defense	<i>Invited Participant</i> , SERDP and ESTCP Expert Panel Workshop on Reducing the Uncertainty of DNAPL Source Zone Remediation	Nov 2006
	<i>Invited Participant</i> , SERDP, Expert Panel on Long-Term Sustainability of Natural Attenuation	May 2003
	<i>Member</i> , Review Panel for the Technology Area Review and Assessment (TARA) for Materials/Processes (Defense Science and Technology Review for Civil Engineering and Environmental Quality)	Mar 2003
	<i>Member</i> , Review Panel for the Technology Area Review and Assessment (TARA) for Materials/Processes (Defense Science and Technology Review for Civil Engineering and Environmental Quality)	Mar 2001
	<i>Invited Participant</i> , SERDP/ESTCP Chlorinated Solvents Expert Panel Meeting	Aug 2001
Union College	<i>*Member</i> , Board of Trustees	2021-
	<i>*Member</i> , Academic Affairs Committee	2021-
	<i>*Member</i> , Admissions Committee	2021-
	<i>*Member</i> , Facilities and Environment Committee	2021-
Bigelow Laboratory for Ocean Sciences, East Boothbay, ME	<i>Member</i> , Board of Trustees	2016-2020
	<i>Chair</i> , Trustee Education Committee	2018-2020
Stockholm Environment Institute, USA	<i>*Member</i> , Board of Directors	2018-
	<i>*Member</i> , Audit Committee	2019-
State of Michigan	<i>Member</i> , Science Advisory Committee of the Ecology Center and the Michigan Environmental Council	2001-03
	<i>Guest Scientist</i> , Michigan Environmental Sciences Board	1999-01
	<i>Member</i> , Indoor Air Panel	2000-01
University Advisory and Visiting Committees	<i>*Member</i> , International Advisory Committee, Graduate Program of Resilient Infrastructure Technology, Yonsei University, Seoul, Korea	2022-
	<i>*Member</i> , University of Rhode Island NIEHS Superfund Research Program External Advisory Committee	2020-

University Advisory and Visiting Committees (cont)	<i>Member, Brown University NIEHS Superfund Research Program Center Advisory Committee</i>	2018-2020
	<i>Member, Academic Advisory Board, Civil and Environmental Engineering Department, University of Illinois at Champaign-Urbana</i>	2012-2014
	<i>Member, National Advisory Board Executive Leadership in Academic Technology and Engineering (ELATE), Drexel Univ, Chair (2015-17)</i>	2011-2017
	<i>Member, Northeastern University ADVANCE External Advisory Committee</i>	2009-2015
	<i>Member, New England Association of Schools and Colleges Visiting Evaluation Team for Harvard University</i>	Oct 2009
	<i>Member, Visiting Committee, Yale University, Faculty of Engineering</i>	Nov 2006
	<i>Chair, External Review Committee, School of Civil Engineering, Purdue Univ.</i>	Oct 2005
	<i>Chair, Review Committee for Department of Civil and Environmental Engineering, Duke University</i>	Mar 2004
	<i>Invited Panel Member and Co-Organizing Committee, Women in Science and Engineering Retreat, sponsored by the University of Michigan College of Engineering and the UM ADVANCE Program, October 17-18, Ypsilanti, MI</i>	2003
	<i>Member, Western Region Hazardous Substance Research Center Science Advisory Committee, Stanford University & Oregon State University</i>	1995-01

National/International Society Activities

American Geophysical Union (1981-) Fellow	<i>Co-Chair, Hydrology Section Awards Task Force</i>	2021-22
	<i>Member, Union Fellows Committee, Chair (2004-06)</i>	2002-06
	<i>Deputy Editor, Water Resources Research</i>	2000-03
	<i>Member, Robert E. Horton Medal Committee</i>	1996-97
	<i>Member, Water Resources Research Editor Search Committee</i>	1995-96
	<i>Secretary, Hydrology Division</i>	1992-94
	<i>Associate Editor, Water Resources Research</i>	1989-93
	<i>Member, Water Resources Research Direction and Review Committee</i>	1991-92
	<i>Member, Public Information Committee</i>	1990-92
	<i>Member, Groundwater Committee (Hydrology Division)</i>	1986-92
	<i>Co-Chair, Symposium on Modeling Fate and Transport of Organics in Groundwater Systems, American Geophysical Union Fall Meeting</i>	1988
	<i>Co-Chair, Symposium on the Coupling of Geochemical and Hydrologic Models for Subsurface Solute Transport, American Geophysical Union Spring Meeting</i>	1985

American Society of Civil Engineers (2014-)	<i>Member, Task Subcommittee on Immiscible Contaminants</i>	1996-01
American Society of Engineering Education (2003-)	<i>Elected Member, Engineering Deans Council Executive Board</i>	2009-11
	<i>Member, Advisory Board, Journal of Engineering Education</i>	2008-14
	<i>Member, Organizing Committee, Engineering Deans Institute</i>	2008-09
Association of Environmental Engineering and Science Professors (1989-)	<i>Member, 1996 Education Conference Planning Committee</i>	1995-96
	<i>Invited Discussant, September 20-22, Conference on Research Directions and Opportunities in Environmental Engineering</i>	1993
	<i>Member, Board of Directors</i>	1990-92
	<i>Invited Discussant, November 13-15, Conference on Fundamental Research Directions in Environmental Engineering</i>	1988
International Association of Hydrologic Sciences	<i>Convenor, Groundwater Contamination Symposium, at the Third Scientific Assembly, Baltimore, MD</i>	May 1989
International Society for Porous Media (InterPore)	<i>Elected Member, Council</i>	2017-20
	<i>*Ombudsperson</i>	2021-
Other Editorial Boards	<i>Advances in Water Resources</i>	1997-00
	<i>Computational Geosciences</i>	1996-00
	<i>In Situ</i>	1992-96

Other Professional Society Memberships

American Association for the Advancement of Science (2003-)
 American Chemical Society (2003-)
 Association of Ground Water Scientists and Engineers (1981-)
 Association of Women Geoscientists (1985-2017)
 InterPore (2015-)
 Society for Industrial and Applied Mathematics (1996-)
 Society of Women Engineers (2003-)

Honorary Society Memberships

Phi Kappa Phi (Scholarship)
Tau Beta Pi (Engineering)
Sigma Xi (Scientific Research)
Chi Epsilon (Civil Engineering)

Additional Conference Organization/Participation

Gordon Research Conferences

Invited Speaker, July 2004, Conference on Flow in Permeable Media
Chair, August 2000, Conference on Modeling Flow in Permeable Media
Organizing Committee, August 1998, Conference on Modeling of Flow in Permeable Media
Invited Speaker, June 1994, Conference on Environmental Sciences
Invited Speaker, August 1992, Conference on Modeling of Flow in Permeable Media
Invited Speaker, August 1990, Conference on Modeling of Flow in Permeable Media

Anita Borg Institute for Women and Technology (ABIWT)

Invited Participant, Institute for Women and Technology Leadership Workshop, co-sponsored by the Institute for Pure & Applied Mathematics (IPAM), Jan, 2004, UCLA, Los Angeles, CA

Computational Methods in Water Resources

Invited Panel Member, June 2002, XIV International Conference
Session Chair and Invited Speaker, June 1996, XI International Conference
Session Chair, June 1990, VIII International Conference
Session Chair, June 1988, VII International Conference

Superfund Basic Research Program

Invited Panel Member, June 2002, Bioremediation and Biodegradation Conference, Asilomar, CA

ModelCARE 99: Calibration and Reliability in Groundwater Modeling

Organizing Committee and Session Chair, June 2002, Prague, Czech Republic
Organizing Committee and Session Chair, September 1999, Zurich, Switzerland

Institute for Mathematics (Britain)

Organizing Committee, Modeling Permeable Rocks, March 2001, Churchill College, Cambridge

International Conference on Groundwater Research

Organizing Committee, Groundwater 2000, June 2000, Copenhagen, Denmark

International Conference on Groundwater Quality

Session Chair, GQ1998, September 1998, Tuebingen, Germany
Organizing Committee, GQ2001, September 2001, Sheffield, England

Institute for Mathematics and its Applications

Invited Scientist in Residence, Workshop on Environmental Studies, July 1992, University of Minnesota, Minneapolis

NATO Advanced Studies Institute

Participant and Speaker, June 1992, Migration and Fate of Pollutants in Soils and Subsoils, Maretea, Italy

Invited Participant and Speaker, July 1989, Transport Processes in Porous Media, Pullman, WA

RESEARCH INTERESTS:

Dr. Abriola's primary research area is the mathematical modeling of the transport and fate of environmental contaminants in multiphase porous media systems. She developed the first mathematical model to appear in the hydrology literature that describes the interphase mass partitioning and non-aqueous phase migration of organic liquid contaminants in the subsurface. This work and her subsequent multiphase flow modeling investigations have been widely referenced in the literature.

Her research is characterized by the coupling of mathematical models and laboratory experiments to understand and quantify processes influencing the migration and persistence of contaminants in the environment and controlling the effectiveness of aquifer remediation and characterization technologies. Abiotic and biotic transformations and their interaction with physical transport mechanisms are examined through interdisciplinary collaboration with other investigators. Representative application areas include: (1) investigation of organic vapor transport mechanisms; (2) quantification of organic liquid residual dissolution; (3) exploration of the influence of soil wettability and dynamic capillary effects on multiphase fluid flow; (4) development of surfactant and nanoscale zero valent iron aquifer remediation technologies for treatment of contaminated source zones; (5) evaluation of the *in situ* biotransformation of organic solutes and entrapped organic liquids; and (6) quantification of the benefits of source zone mass removal in heterogeneous environments. Current and recent funding encompasses: measurement and modeling of effective mass transfer and microbial transformation rates at the field scale; use of machine learning and signal processing techniques to quantify *in situ* contaminant mass flux and mass distribution from sparse data; development of innovative nanoparticle tools for subsurface characterization; exploration of the processes controlling transport of nanoparticles in subsurface environments; and investigation of the migration and persistence of per- and polyfluoroalkyl substances (PFAS).

FUNDED RESEARCH (> \$22 M in total contracts)

Measurement and Modeling of Nanoparticle Mobility for Advanced Oil Recovery, co-PI with K. Pennell (PD), Advanced Energy Consortium (AEC) continuation funding, January 2023, \$139,230 (1 year).

Experimental Evaluation and Mathematical Modeling of Particulate Amendment Delivery, Retention and Adsorption Performance in the Subsurface, co-PI with co-PIs Kurt Pennell (Brown Univ) and Rula Deeb (Geosyntec Consultants, Inc) Strategic Environmental Research and Development Program (SERDP); April 2022; \$1.2M (3 years)

Measurement and Modeling of Nanoparticle Mobility for Advanced Oil Recovery, co-PI with K. Pennell (PD), Advanced Energy Consortium (AEC) continuation funding, January 2022, \$132,776 (1 year).

Measurement and Modeling of Nanoparticle Mobility for Advanced Oil Recovery, PI, Advanced Energy Consortium (AEC), January 2020, \$62,652 (1 year).

Development and Laboratory Validation of Mathematical Modeling Tools for Prediction of PFAS Transformation, Transport, and Retention in AFFF Source Areas; Project Director, with co-PIs Kurt Pennell (Brown Univ), Natalie Capiro (Auburn Univ); and Thomas Phelan (US Air Force Academy); Strategic Environmental Research and Development Program (SERDP); July 2018; \$1.36M (3 years)

Measurement and Modeling of Nanoparticle Mobility for Advanced Oil Recovery, Co-PI with K. Pennell (Project Director, Tufts), Advanced Energy Consortium (AEC), September 2013, \$605,000 (5.5 years).

Development of an integrated field test modeling protocol for efficient in situ bioremediation design and performance uncertainty assessment, Project Director, with co-PIs N. Capiro, E. Miller and K. Pennell (Tufts), L. Chu (Nobis Eng.), and J. Christ (USAF Academy), Strategic Environmental Research and Development Program (SERDP), April 2013, \$1.4M (3 years).

Impacts of surface coating aging on nanomaterial fate and transport in porous media, Co-Principal Investigator with K. Pennell (Project Director, Tufts) Yonggang Wang (Tufts) and J. Fortner (Wash U), National Science Foundation, September 2012, total \$309,999 (3 years).

Modeling and synthesizing high mobility nanoparticles for advanced oil recovery, Co-Principal Investigator with K. Pennell (Tufts) and V. Colvin (Rice Univ, Project Director), Advanced Energy Consortium (AEC), June 2009, \$940,000 total, subcontract to Tufts \$564,260 (3 years).

Metric identification and protocol development for characterizing DNAPL source zone architecture and associated plume response, Project Director, with co-PIs K. Pennell, E. Miller, and A. Ramsburg (Tufts), and J. Christ (USAF Academy), Strategic Environmental Research and Development Program, April 2008, \$1.3M (3 years).

Fate and transport of metal-based nanoparticles in the subsurface, Co-Principal Investigator with K. Pennell (Project Director, Tufts) and Y. Li (Univ Nebraska), National Science Foundation, July 2009, \$350,000 (3 years).

Modeling and synthesizing high mobility nanoparticles for advanced oil recovery, Co-Principal Investigator with K. Pennell (Tufts) and V. Colvin (Rice Univ, Project Director), Advanced Energy Consortium (AEC), June 2009, \$750,000 total, subcontract to Tufts \$375,000 (3 years).

Multi-modal and shape-based inverse methods for the characterization of DNAPL source zone architecture, Co-Principal Investigator with E. Miller (Project Director) and A. Ramsburg (Tufts), National Science Foundation, June 2009, \$360,000 (3 years).

Fate and transport of carbon nanoparticles in unsaturated and saturated soils, Co-Principal Investigator with K. Pennell (GA Tech, Project Director) and J. Hughes (GA Tech), U.S. EPA STAR Grant, November 2005, \$375,000 total, subcontract to Tufts \$161,034 (3 years).

Development and optimization of targeted nanoscale iron delivery approaches for treatment of NAPL source zones, Project Director with co-PIs K. Pennell (GA Tech) and C. A. Ramsburg (Tufts University), Strategic Environmental Research and Development Program, \$817,765 (3 years).

Reduced iron sulfide systems for removal of heavy metal ions from groundwater, Co-Principal Investigator with K. Hayes (Project Director) (UM) and other UM researchers, Strategic Environmental Research and Development Program, Sept. 2004, total award: \$1,087,000, subcontract to Tufts \$112,948 (3 years).

Development of assessment tools for evaluation of the benefits of DNAPL source zone treatment, Project Director, with co-PIs K. Pennell and F. Loeffler (GA Tech), and P. Goovaerts (UM), Strategic Environmental Research and Development Program, April 2002, total award \$1,344,928 (5 years).

Migration and entrapment of DNAPLs in heterogeneous systems: Impact of waste and porous medium composition, Project Director, with co-PI A. Demond, U.S. Department of Energy, October 2000; \$675,000, no cost extension through Sept. 2004 (3 years).

Processes influencing the natural attenuation of organic contaminant plumes; Project Director, with co-PI J. Kukor, Rutgers U., National Institutes of Environmental Health Sciences, May 2000; \$1,079,636 (5 years).

Sources transport and fate of toxic metals in the geosphere, Co-Investigator (R. Ewing and J. Blum, PIs), UM Office of the Vice President for Research, Dec 1999; \$200,000 (2 years).

Remediation of chlorinated solvents at the Bachman road site, Project Director of surfactant portion, with a number of co- investigators, Michigan Department of Environmental Quality, January 1999, Phase II and III, \$769,032 (2 years).

Development of the density modified displacement (DMD) method for efficient recovery of DNAPLs from contaminated aquifers: Experimental evaluation and mathematical modeling, Co-Principal Investigator with K. Pennell and K. Rathfelder, Great Lakes Mid-Atlantic Center for Hazardous Substance Research Center, September 1998, \$263,534 (2 years).

Investigation of the influence of rate-limited mass transfer on DNAPL solubilization and the long-term persistence of surfactant/contaminant residuals in natural aquifer materials, Project Director, with co-PI K. Pennell, Great Lakes Mid-Atlantic Center for Hazardous Substance Research Center, September 1998, \$146,828 (2 years).

Remediation of chlorinated solvents at the Bachman road site, Project Director of surfactant portion, with a number of co- investigators, Michigan Department of Environmental Quality, June 1997, Phase I, \$517,145 (surfactant portion); (18 months).

The use of surfactants to enhance removal of chlorinated hydrocarbons from aquifer materials: Correlation development, Project Director, with co-PIs K. Hayes and A. Demond (UM), Great Lakes Mid-Atlantic Center for Hazardous Substance Research Center, April 1997, \$157,813 (1 year).

Investigation of the entrapment and surfactant enhanced recovery of non-aqueous phase liquids in heterogeneous media, Project Director, with co-PIs J. Dane (Auburn University) and K. Pennell (GA Tech), U.S. Environmental Protection Agency, November 1996, \$498,000(3 years).

The migration and entrapment of DNAPLs in physically and chemically heterogeneous porous media, Project Director, with co-PI A. Demond, U.S. Department of Energy, September 1996, \$582,378 (3 years).

Development and application of a numerical bioremediation simulator for Wurtsmith Air Force Base, Fire Training Area #2, Project Director, Great Lakes Mid-Atlantic Center for Hazardous Substance Research; June 1996, \$71,235(1 year).

Carbon exchange dynamics in a temperate forested watershed (Northern Michigan): A laboratory and field multidisciplinary study, Co-Principal Investigator with five investigators throughout UM, National Science Foundation, October 1996, \$800,000 (3 years).

The use of surfactants to enhance the removal of chlorinated hydrocarbons from aquifer materials (DOD augmentation for retraining), Co-Principal Investigator, U.S. Environmental Protection Agency (Hazardous Substance Research Center), May 1995, \$100,610(15 months).

Investigation of the distribution and persistence of non-aqueous phase organic liquid contaminants in natural subsurface systems, co-Principal Investigator, National Institute of Environmental Health Sciences, April, 1995, \$168,000/yr (5 years).

Development of a NAPL infiltration and redistribution computer module for MOSES, Project Director, Electric Power Research Institute, January 1995, \$40,186 (2 years).

Hydrogeochemistry of the antrim shale in the Northern Michigan basin: Developing predictive relations among formation water chemistry, gas production, and petrophysical data, Co-Investigator (L. Walter, Dept. of Geosciences, Project Director), Gas Research Institute, September 1993, \$332,000 (14 months).

The use of surfactants to enhance the removal of chlorinated hydrocarbons from aquifer materials, Project Director, U.S. Environmental Protection Agency (Hazardous Substance Research Center), \$695,000 (3 years).

Phase I of the bioremediation field research initiative at Wurtsmith AFB: Establishment of baseline conditions at FT-2 and a comprehensive investigation of intrinsic bioremediation, Co-Principal Investigator, U.S. Environmental Protection Agency, June 1993, \$926,979 (2 years).

A computer program to model bioventing of organic chemicals in unsaturated geological material, Project Director, U.S. Environmental Protection Agency, September 1993, \$200,000 (2 years).

Vapor-phase transport and mass transfer of volatile organic chemicals in the unsaturated zone, Co-Principal Investigator, National Institute of Environmental Health Sciences, April 1992, \$513,402 (3 years).

FAW: Modeling the impact of abiotic and biotic transformation processes on the subsurface transport and fate of contaminants, Project Director, National Science Foundation, November 1991, \$250,000 (5 years).

Investigation of surfactant enhanced remediation of aquifers contaminated by dense non-aqueous phase liquids, Co-Principal Investigator, U.S. Environmental Protection Agency (R. S. Kerr Lab), October 1991, \$301,548 (3 years).

Phase equilibria and transport properties of surfactant systems of interest to soil remediation, Co-Principal Investigator, U.S. Environmental Protection Agency, September 1990, \$210,000 (3 years).

Development and verification of a two-phase immiscible flow simulator for site assessment, Project Director, Electric Power Research Institute, July 1989, \$99,419 (18 months).

Experimental assessment and modeling of organic compound interphase mass transfer rates in multiphase subsurface systems, Co-Principal Investigator, U.S. Department of Energy, July 1989, \$450,063 (3 years).

Development and application of a mathematical model for BTX release, transport and bioremediation, Project Director, Michigan Oil and Gas Association, April 1989, \$166,104 (3 years).

Modeling surfactant mobilization of entrapped organic liquids in groundwater systems, Project Director, U.S. Environmental Protection Agency, March 1989, \$120,000 (2 years).

Mass transfer reactions between volatile organic contaminants and aqueous and vapor phases in subsurface environments, Co-Principal Investigator, National Institute of Environmental Health Sciences, January 1989, \$323,613 (3 years).

Modeling volatilization and vapor transport of contaminants in the subsurface, Project Director, National Institute of Environmental Health Sciences, January 1989, \$245,244 (3 years).

Development of software for instructional use in groundwater hydrology, Project Director, CAEN Instructional Innovation Program, The University of Michigan, May 1987, \$19,300 (15 months).

Computer equipment donation, Sun Microsystems, Inc., September 1986, \$17,750.

Forum on NSF research activities in subsurface systems, National Science Foundation, Co-Principal Investigator and host of Forum at University of Michigan, Ann Arbor, July 23-25, 1986, \$16,532.

Miscible-immiscible organic chemical transport modeling - An evaluation, Project Director, Electric Power Research Institute, Palo Alto, CA, January 1986, \$49,000 (28 months).

Research Award, General Motors Corporation, matching funds for NSF Presidential Young Investigator Award, 1985, \$37,500.

Modeling immiscible-miscible organic chemical transport in the subsurface, National Science Foundation, Presidential Young Investigator Award, July 1985, \$312,500 (5 years).

TEACHING EXPERIENCE (* courses developed and introduced)*Graduate Level Courses.*

ENGN2342	Groundwater Flow and Transport	Brown University
ENGN2911P	Fate and Transport of Environmental Contaminants	Brown University
NSWM 02*	Water Science and Systems Analysis	Tufts University
CEE 230*	Reactive Transport in Porous Media	Tufts University
CEE 528*	Theory of Flow and Transport in Porous Media	University of Michigan
CEE 628*	Numerical Modeling of Subsurface Flow	University of Michigan

Undergraduate Level Courses

ENGN1342*	Groundwater Flow and Transport	Brown University
CEE 36	Environmental Processes	Tufts University
CEE 420	Hydrology	University of Michigan
CEE 428*	Introduction to Groundwater Hydrology	University of Michigan
ME 324	Fluid Mechanics	University of Michigan

Short Courses, University of Michigan

Engineering Conferences, 1995-96

Guest lecturer in Transport, Reaction and Phase Change in Porous Media

DOCTORAL COMMITTEES CHAIRED

Elsy, Jack; *The Numerical Modeling of Microbial Reductive Dechlorination: Monod Kinetic Parameter Estimation and Uncertainty Analysis*; December 2022.

Mohammadnejad, Hamed; *Numerical Modeling of Nanoparticle Transport in Porous Media for Application to Conformance Control*, completed March 2021. Hamed is currently a Post Doc at Virginia Tech, Blacksburg, VA.

Yang, Lurong; *Influence of Coupled Processes on Microbial Reductive Dechlorination in Heterogeneous Porous Media*, completed May 2020. Lurong is currently an Environmental Engineer at Gradient, Cambridge, MA.

Tang, Tian; *An Adjoint-Sensitivity-Analysis Based Mathematical Framework: DNAPL Source Zone Characterization, Uncertainty Quantification, and Sampling Strategy Design*, completed December 2018. Tian is currently an Environmental Engineer at Gradient, Cambridge, MA.

Becker, Matthew; *Modeling the influence of solution chemistry and stabilizing agents on nanoparticle transport*, completed May 2015. Matt is currently an Internal Consultant at Ab Initio Software, Lexington, MA.

Taghavy, Amir; *Hybrid modeling of nanoparticle reactivity and aggregation in multiphase systems*; completed May 2013. Amir is currently a DataOps Engineering at Tamr, Cambridge, MA.

Boroumand, Ali; *Interphase partitioning kinetics and applications to DNAPL site evaluation*; completed May 2013. Ali is currently a Senior Environmental Engineer at Gradient, Cambridge, MA.

Wang, Li; *Evaluating long-term performance of permeable reactive barriers using reactive transport modeling*, completed September 2009. Li is currently a Remediation Engineer at California Department of Toxic Substances Control, Sacramento, CA.

Li, Ke; *Uncertainty analysis in quantification of near source zone mass flux*, completed October 2007, recipient of the Outstanding Student Paper Award for her presentation at the 2006 AGU Fall Meeting, Betty is currently employed as Operations Manager, Sr. Environmental Manager, Tetra Tech, Sacramento, CA.

Gallegos, Tanya; *Sorption and transport of as (III) through porous media containing Mackinawite*, completed August 2007. ACS student presentation award winner (2005), Battelle Graduate Student Paper Award (2006), and USGS Mendenhall Postdoctoral Fellowship (2007). Tanya is currently a Research Engineer at the U.S. Geological Survey in Reston, VA.

Christ, John; *A numerical investigation of metabolic reductive dechlorination in DNAPL source zones*, completed June 2005. John has recently retired from his position as Professor and Head, Department of Civil and Environmental Engineering at the U.S. Air Force Academy, Colorado Springs, CO; he is now Senior Project Manager at S&B Christ Consulting, LLC, Las Vegas, NV

Da Silva, Eduardo; *Numerical modeling of arsenic transport in groundwater*; completed November 2004. Eduardo returned to Brazil to work for the Brazilian Nuclear Regulatory Commission.

Phelan, Tom; *Modeling the influence of fluid composition on wettability*, completed May 2004. Tom is currently an Associate Professor at the U.S. Air Force Academy, Colorado Springs, CO.

Putthividhya, Aksara; *Quantification of processes affecting attachment of bacteria in natural subsurface environments*, completed April 2004. Aksara is an Assistant Professor at Chulalongkorn University, Thailand.

O'Carroll, Denis; *Influence of surface wettability on NAPL transport properties*; candidate; completed December 2003; Denis is an Associate Professor in the School of Civil and Environmental Engineering and Director of the Water Research Centre at the University of New South Wales (Australia) and a recipient of a Govt. of Ontario Early Researcher Award (2007).

Lemke, Lawrence; *Influence of alternative spatial variability models on solute transport, DNAPL entrapment, and DNAPL recovery in a homogeneous, nonuniform sand aquifer*; completed August 2003; Larry is currently Professor and Chair of the Department of Earth and Atmospheric Sciences at Central Michigan University. He was a 2008 NSF CAREER Award recipient.

- Park, Joonhong; *Influence of substrate exposure history on biodegradation in porous media*, completed 2002. Joonhong is Chair and Professor of the BK21 Graduate Program of Resilient Infrastructure Technology in the School of Civil and Environmental Engineering at Yonsei University, Seoul, Korea.
- Lang, John; *Self-adaptive hierarchic finite element solution of multiphase / Multicomponent transport with microbial growth and degradation*, completed December 1999; John is currently VP Operations at AmCane Sugar LLC in Detroit, MI.
- Glascoc, Lee; *Exploring the sensitivity of bioventing operations to temperature and moisture changes*, Co-chair, completed May 1999. Lee is currently a Staff Scientist at Lawrence Livermore National Laboratory in Livermore, CA.
- Dianne Luning-Prak, *Rate-limited solubilization of liquid organic compounds in micellar surfactant solutions*, completed 1998. Diane is currently a Professor in the Department of Chemistry at the US Naval Academy in Bethesda, MD.
- Dekker, Tim; *Impact of aquifer heterogeneities on surfactant-enhanced solubilization of organic contaminants*; completed June 1996; Tim is currently the President of Limno Tech, Ann Arbor, MI.
- Chen, Yung-Ming; *Mathematical Modeling of In-situ Bioremediation of BTX Contaminated Sites*; completed May 1996; Yung-Ming's dissertation was awarded the 1997 Universities Council on Water Resources Dissertation Award. He is currently employed by Ford Motor Company, Dearborn, MI.
- Diallo, Mamadou; *Experimental assessment of hydrocarbon solubilization in micellar solutions of ethoxylated nonionic surfactants*; Co-Chair; completed April 1995. Mamadou is the Chief Technology Officer of AquaNano, LLC, Monrovia, CA and a visiting faculty member at California Institute of Technology, Pasadena, CA
- Abu-El-Sha'r, Wa'il; *Experimental assessment of the application of the dusty gas model to multicomponent organic vapor transport*; completed May 1993. Wa'il is currently a Senior Technical Advisor at Jordan Atomic Energy Commission (JAEC) and a Professor of Civil Engineering at the Jordan University of Science and Technology, Irbid, Jordan.
- Reeves, Howard; *A decoupled approach to the modeling of organic vapor transport in porous media*; completed February 1993; Howard is currently a Research Hydrologist at the U.S. Geological Survey Michigan-Ohio Water Science Center, Columbus, OH.
- Fen, Chiu-Shia; *Mathematical modeling and analysis of flux mechanisms controlling multicomponent vapor transport in the subsurface*; completed January 1993; Chiu-Shia is currently a Professor in the Department of Environmental Engineering and Science at Feng Chia University in Taiwan, ROC.
- Powers, Susan; *Dissolution of non-aqueous phase liquids in saturated subsurface systems*; Co-Chair, completed June 1992. Susan is currently the Spence Professor of Sustainable

Environmental Systems and Director of the Institute for a Sustainable Environment at Clarkson University, Potsdam, NY.

Gamliel, Amir; *Simulation of immiscible multiphase flow in porous media using a moving grid finite element algorithm*; completed March 1989; Amir is an Environmental Compliance Program Manager, U.S. Southern Command, Doral, FL.

Loureiro, Celso; *Calculation of the steady-state indoor radon concentration in a house with the basement under a constant negative pressure*; Department of Environmental and Industrial Health; Co-Chair, completed April 1987; Celso is Professor Emeritus of the Environmental Engineering Department at the Universidade Federal de Minas Gerais in Belo Horizonte, Brazil.

POST DOCTORAL AND RESEARCH FACULTY SUPERVISION

Uriel de Jesus Garza Rubalcava (2022-

Simin Akbariyeh (2021-2022), currently an Environmental Engineer at AECOM, Boston, MA

Masoud Arshadi (2015-2020), currently an Environmental Engineer at Gradient, Charlottesville, VA

Stephanie Veran-Tissoires (2013-2015), currently Lecturer, ATER – ENSAM, Institut de Mécanique et d'Ingénierie de Bordeaux, France

Maria Elenius (2013- 2015), currently Senior Researcher, Uni Research CIPR, Bergen, Norway

Itza Mendoza-Sanchez (2010-12); is currently an Assistant Professor in the Department of Environmental and Occupational Health, Texas A&M University, College Station, TX

Mingjie Chen (2008-2010); formerly Technical Staff Member Geochemical, Hydrological and Environmental Sciences, Lawrence Livermore National Laboratory; currently Senior Hydrogeologist, Water Research Center, Sultan Qaboos University, Sultanate of Oman.

Yusong Li (2005-08); currently an Associate Professor in the Department of Civil Engineering at the University of Nebraska, Lincoln; awarded a 2009 National Risk Management Research Laboratory EPA Summer Faculty Fellowship.

Andrew Ramsburg (2002-05); currently an Associate Professor in the Department of Civil and Environmental Engineering, Tufts University, Medford, MA.

Scott Bradford (1995-2000); currently a Soil Scientist at the USDA-ARS U.S. Salinity Laboratory, Riverside, CA.

Kurt D. Pennell (1990-1995); currently 250th Anniversary Professor of Engineering, Brown University, Providence, RI

Klaus Rathfelder (1989-2001); currently a Senior Engineer, GeoSyntec Consultants, Portland, OR.

EXTERNAL EXAMINER

Ahmet Karagunduz, PhD, Georgia Tech, February, 2002

Sarah Dickson, PhD, University of Waterloo, October 2001

Rikje van De Weerd, PhD, Wageningen University, The Netherlands, October 2000

Mario Schirmer, PhD, University of Waterloo, Canada, November 1998

Torben Sonnenborg, PhD, Technical University of Denmark, April 1998

André J.A. Unger, PhD, University of Waterloo, September 1995

Michael Butts, PhD, Technical University of Denmark, January 1995

PUBLICATIONS AND OTHER SCHOLARLY PRODUCTS**(SCI: h-index = 43; Google Scholar: h-index= 57)****Patents**

1. Li, B. K. and L. M. Abriola; Method for multi-stage spatial sampling with multiple criteria; US Patent Number: 8615379; Filed December 11, 2007; Granted December 24, 2013; Assignee: Tufts University.

Book and Monographs

1. NRC Committee on Gender Differences in Careers of Science, Engineering, and Mathematics Faculty, *Gender Differences at Critical Transitions in the Careers of Science, Engineering, and Mathematics Faculty*, National Academies Press, 2009 (co-author).
2. NRC Committee on Source Removal of Contaminants in the Subsurface, *Contaminants in the Subsurface*, National Academy Press, 2005 (co-author).
3. NRC Committee on Ground Water Cleanup Alternatives, *Alternatives for Ground Water Cleanup*, National Academy Press, 1994 (co-author).
4. Abriola, Linda M., ed. 1989. *Groundwater Contamination*, Proceedings of the Symposium held during the Third IAHS Scientific Assembly, Baltimore, MD, May 1989, IAHS Publ. No. 185, Galliard, Great Yarmouth, 197pp.
5. Abriola, Linda M., 1984. Multiphase Migration of Organic Compounds in a Porous Medium - A Mathematical Model, *Lecture Notes in Engineering*, Vol. 8, Springer-Verlag, Berlin, 232pp.

Book Chapters

1. Abriola, L. M., J. A. Christ, K. D. Pennell, and C. A. Ramsburg. 2012. Chapter 10: Source Zone Remediation Challenges. In *Delivery and Mixing in the Subsurface: Processes and Design Principles for In Situ Remediation*, P. K. Kitanidis and P. L. McCarty (Eds), Springer Science, 239-276.
2. Abriola, L. M. and M. W. Davies. 2009. Attracting and Retaining Women in Engineering: The Tufts University Experience, *Doctoral Education and the Faculty of the Future*, Ronald G. Ehrenberg and Charlotte V. Kuh, eds., Chapter 14, 192-205, Cornell University Press, Ithaca, NY.
3. Abriola, L. M., A. H. Demond, D. M. O'Carroll, H. Hsu, T. J. Phelan, C. A. Polityka, and J. L. Ryder. 2005. Compositional Effects on Interfacial Properties in Contaminated Systems: Implications for Organic Liquid Migration and Recovery, *Subsurface Contamination Remediation*, (T. Zachry and E. Berkey, eds.), American Chemical Society Symposium Series 904, Chapter 8, 160-182, American Chemical Society, Washington D.C., 2005.
4. Rubin, H., K. Rathfelder, L. M. Abriola, M. Spiller, G. Demny, and J. Kongeter. 2002. The Effect of Fractures on the Reclamation of NAPL Contaminated Aquifers, *Water Resources Quality: Preserving the Quality of Our Water Resources*, H Rubin et al., eds., 54-82, Springer-Verlag.

5. Abriola, L. M. 2000. Modeling of Organic Liquid Entrapment and Surfactant Enhanced Recovery in Heterogeneous Media, *Computational Methods for Flow and Transport in Porous Media*, J. M. Crolet, ed., *Theory and Applications of Transport in Porous Media, Volume 17*, 303-318, Kluwer Academic Publishers. **(keynote paper)**
6. Abriola, L. M., K. D. Pennell, W. J. Weber, Jr., J. R. Lang, and M. D. Wilkins. 1999. Persistence and Interphase Mass Transfer of Organic Contaminants in the Unsaturated Zone: Experimental Observations and Mathematical Modeling, *Vadose Zone Hydrology: Cutting Across Disciplines*, M. B. Parlange and J. W. Hopmans, eds., 210-234, Oxford University Press.
7. Rubin, H., K. Rathfelder, and L. M. Abriola. 1998. Characteristics of Entrapped LNAPL Dissolution and Transport in a Contaminated Fractured Permeable Medium, *Soil and Aquifer Pollution, Non-Aqueous Phase Liquids - Contamination and Reclamation*, H. Rubin, N. Narkis, and J. Carberry, eds., 236-256, Springer-Verlag.
8. Dekker, T. J. and L. M. Abriola. 1998. Solubilization of Dense NAPLs: Exploring the Implications of Experimental Observations on Field-Scale Surfactant-Enhanced Remediation, *Soil and Aquifer Pollution, Non-Aqueous Phase Liquids - Contamination and Reclamation*, H. Rubin, N. Narkis, and J. Carberry, eds., 18-34, Springer-Verlag.
9. Pennell, K. D. and L. M. Abriola. 1998. Surfactant-Enhanced Aquifer Remediation: Fundamental Processes and Practical Applications, *Bioremediation: Principles and Practice, Volume 1*, 693-750, S. K. Sikdar and R. L. Irvine, eds., Technomic Publishers, Lancaster, PA.
10. Weber, W. J., Jr., K. D. Pennell, T. J. Dekker, and L. M. Abriola. 1996. Sorption and Retardation in Subsurface Systems: Effects on the Transport and Fate of Organic Contaminants, *Recent Advances in Ground-Water Pollution Control and Remediation*, M.M. Aral (ed.), Series 2: Environment, vol 9, 1-31, Springer-Verlag/Kluwer Academic Publishers, London.
11. Abriola, L. M., K. D. Pennell, G.A. Pope, T. J. Dekker, and D. J. Luning-Prak. 1995. Impact of Surfactant Flushing on the Solubilization and Mobilization of Dense Nonaqueous Phase Liquids, *Surfactant Enhanced Subsurface Remediation: Emerging Technologies*, (D. Sabatini, et al., ed) *ACS Symposium Series 594*, Chapter 2, 12-23, American Chemical Society, Washington D.C.

Peer Reviewed Journal Publications

1. Liao, S., S. Akbariyeh, X. Chen, C. Klevan, C. Greenley, K. P. Johnston, L. M. Abriola, and K. D. Pennell. 2022. Evaluation of Polyelectrolyte Complex Nanoparticles for Prolonged Scale Inhibitor Release in Consolidated Porous Media, submitted to *Energy & Fuels*.
2. Elsey, J., E. Miller, J. Christ, and L. M. Abriola. 2022. On the Reliable Estimation of Sequential Monod Kinetic Parameters, submitted to *Environ Sci & Technol*.
3. Dong, S., P. Yan, C. Liu; K. E. Manz, M. P. Mezzari, L. M. Abriola, K. D. Pennell, and N. L. Capiro. 2023. Assessing aerobic biotransformation of 8:2 fluorotelomer alcohol in aqueous film forming foam impacted soil: pathways and microbial community dynamics, *J. Hazardous Materials*, 46, 130629, <https://doi.org/10.1016/j.jhazmat.2022.130629>

4. Chen, X, Z. Zhang, H. Zhong, M. Ahmed, G. Heydari, R. Park, E. Keller, S. Liao, M. Ahmadian, L. Abriola, K. Pennell, and K. Johnston. 2022. Stable Covalently Cross-linked Polyelectrolyte Complex Nanoparticles at High Ionic Strength, submitted to *Macromolecules*.
5. Yan, P., S. Dong, K. Manz, M. Woodcock, C. Liu, M. Mezzari, L. Abriola, K. Pennell and N. Capiro. 2022. Aerobic Biotransformation of 6:2 Fluorotelomer Sulfonate in Soils from Two Aqueous Film-Forming Foam (AFFF)-Impacted Sites, submitted to *Environ Sci & Technol*.
6. Yan, P., S. Dong, K. Manz, L. Chen, M. Woodcock, M. Mezzari, L. Abriola, K. Pennell, N. Capiro. 2022. Biotransformation of 8:2 Fluorotelomer Alcohol in Soil from Aqueous Film-Forming Foams (AFFFs)-impacted Sites under Nitrate-, Sulfate-, and Iron-reducing Conditions, *Environ. Sci. Technol.* 56, 19, 13728–13739 <https://doi.org/10.1021/acs.est.2c03669> .
7. Hnatko, J.P., C. Liu, J.L. Eley, S. Dong, J.D. Fortner, K.D. Pennell, L.M. Abriola, and N.L. Cápiro. 2022. Microbial reductive dechlorination is not inhibited by perfluoroalkyl acids (PFAAs) under environmentally relevant conditions, submitted to *Environ Sci & Technol*.
8. Liao, S., M. Arshadi, M. Woodcock, Z. Saleeba, D. Pinchbeck, C. Liu, N.L. Capiro, L.M. Abriola, K.D. Pennell. 2022. Influence of Residual Nonaqueous-Phase Liquids (NAPLs) on the Transport and Retention of Per- and Polyfluoroalkyl Substances (PFAS), *Environ Sci & Technol* <https://doi.org/10.1021/acs.est.2c00858> .
9. Eley, J. L., J. A. Christ, and L. M. Abriola. 2021. Quantifying Impacts of Microcosm Mass Loss on Kinetic Constant Estimation, *Environ Sci & Technol*, 55(20):13822-13833. <https://doi.org/10.1021/acs.est.1c03452> .
10. Liao, S., C Liu, D. Pinchbeck, N. L. Cápiro, J. D. Fortner, L. M. Abriola and K. D. Pennell. 2021. Effects of Rhamnolipid Biosurfactant on the Dissolution and Transport of Silver Nanoparticles in Porous Media, *Environmental Science: Nano*, <https://doi.org/10.1039/D1EN00185J>
11. Liao, S., Z. Saleeba, J. D. Bryant, L. M. Abriola, and K. D. Pennell. 2021. Influence of aqueous film forming foams on the solubility and mobilization of non-aqueous phase liquid contaminants in quartz sands, *Water Research*, Volume 195 (2021) 116975. <https://doi.org/10.1016/j.watres.2021.116975>
12. Yang, L., J. P. Hnatko, J. L. Eley, J. A. Christ, K. D. Pennell, N. L. Cápiro, and L. M. Abriola. 2021. Exploration of Processes Governing Microbial Reductive Dechlorination in a Heterogeneous Aquifer Flow Cell, *Water Research*, Volume 193 (2021) 116842. doi.org/10.1016/j.watres.2021.116842
13. Mohammadnejad, H., B.A. Marion, A. A. Kmetz, K. P. Johnson, K.D. Pennell, and L.M. Abriola. 2021. Development and Experimental Evaluation of a Mathematical Model to Predict Polymer-Enhanced Nanoparticle Mobility in Heterogeneous Formations, *Environ. Sci.: Nano*, 2021, 8, 470, DOI: 10.1039/DOEN00995D. **selected as a part of a themed collection of HOT papers, that received particularly high scores in peer review in *Environmental Science: Nano*.**
14. Liao, S., A. Ghosh, M. D. Becker, L. M. Abriola, N. L. Cápiro, J. D. Fortner, and K. D. Pennell. 2020. Effect of rhamnolipid biosurfactant on transport and retention of iron oxide nanoparticles in water-saturated quartz sand, *Environmental Science: Nano*, DOI: 10.1039/d0en01033b.

15. Costanza, J., L. M. Abriola, and K. D. Pennell. 2020. Aqueous film-forming foams exhibit greater interfacial activity than PFOA, PFOS, or FOSA, *Environmental Science & Technology*, 54(21), 13590–13597; <https://doi.org/10.1021/acs.est.0c03117>.
16. Arshadi, M., J. Costanza, L. M. Abriola, and K. D. Pennell. 2020. Comment on “Uptake of Poly- and Perfluoroalkyl Substances at the Air–Water Interface” by Schaefer et al. (2019), *Environmental Science & Technology*, <https://dx.doi.org/10.1021/acs.est.0c01838>.
17. Hnatko, J. P., L. Yang, K. D. Pennell, L. M. Abriola, and N. Cápiro. 2020. Bioenhanced back diffusion and population dynamics of *Dehalococcoides mccartyi* strains in heterogeneous porous media; *Chemosphere*, 254:126842, <https://doi.org/10.1016/j.chemosphere.2020.126842>.
18. Mohammadnejad, H., S. Liao, B. A. Marion, K. D. Pennell, and L. M. Abriola. 2020. Development and validation of a two-stage kinetic sorption model for polymer and surfactant transport in porous media; *Environmental Science & Technology*, <https://dx.doi.org/10.1021/acs.est.0c00123>.
19. Arshadi, M., De Paolis Kaluza, M. C., Miller, E. L., & Abriola, L. M. 2020. Subsurface source zone characterization and uncertainty quantification using discriminative random fields, *Water Resources Research*, 56, e2019WR026481, <https://doi.org/10.1029/2019WR026481>.
20. Costanza, J., M. Arshadi, L. M. Abriola, and K. D. Pennell. 2019. Accumulation of PFOA and PFOS at the air-water interface, *Environ Sci and Technol Letters*, 6(8), 487-491; <https://pubs.acs.org/doi/full/10.1021/acs.estlett.9b00355>.
21. Elenius, M. T. and L. M. Abriola. 2019. Regressed models for multi-rate mass transfer in heterogeneous media, *Water Resources Research*, 55, 8646–8665, <https://doi.org/10.1029/2019WR025476>.
22. Taghavy, A, and L.M. Abriola. 2018. Modeling reactive transport of polydisperse nanoparticles: assessment of the representative particle approach, *Environmental Science :Nano*, 5, 2293-2303; <http://dx.doi.org/10.1039/C8EN00666K> ; **selected as a HOT paper, one of the top 10% of papers published in *Environmental Science: Nano*.**
23. Yang, L., X. Wang, I. Mendoza-Sanchez, and L.M. Abriola. 2018. Modeling the influence of coupled mass transfer processes on mass flux downgradient of heterogeneous DNAPL source zones, *Journal of Contaminant Hydrology*, doi.org/10.1016/j.jconhyd.2018.02.003.
24. Lyon-Marion, B.A., M. D. Becker, A. A. Kmetz, E. Foster, K. P. Johnston, L. M. Abriola, and K.D. Pennell. 2017. Simulation of magnetite nanoparticle mobility in a heterogeneous flow cell, *Environmental Science: Nano*, 4, 1512, DOI: 10.1039/c7en00152e.
25. Li, W., Seung S. L., A. Mittelman, D. Liu, J. Wu, C. Hinton, L. Abriola, K. Pennell, and J. Fortner. 2016. Aqueous aggregation behavior of engineered superparamagnetic iron oxide nanoparticles: effects of oxidative surface aging, *Environmental Science & Technology*, DOI: 10.1021/acs.est.6b04130.
26. Putthividhya, A., J. J. Kukor, and L. M. Abriola. 2016. The effects of substrate exposure history and carbon starvation-induced stress on the EPS synthesis of TCE degrading toluene oxidizing soil bacteria, *Environmental Earth Sciences*, 75(9): Article 775, doi: 10.1007/s12665-015-5080-5.

27. Kmetz, A. II, M. D. Becker, B. A. Lyon, E. Foster, K. P. Johnston, L. M. Abriola, and K. D. Pennell. 2016. Improved mobility of magnetite nanoparticles at high salinity with polymers and surfactants, *ACS Energy and Fuels*, 30(3):1915-1926, DOI: 10.1021/acs.energyfuels.5b01785.
28. Englehart, J., B.A. Lyon, M. D. Becker, Y. Wang, L.M. Abriola, and K.D. Pennell. 2015. Influence of a polymeric sunscreen additive on the transport and retention of titanium dioxide nanoparticles in water-saturated porous media, *Environmental Science: Nano*, doi: 10.1039/c5en00174a.
29. Phelan, T, L.M. Abriola, J. L. Gibson, K. M. Smits, and J. A. Christ. 2015. Development and application of screening model for evaluating bioenhanced dissolution in DNAPL source zones, *Journal of Contaminant Hydrology*, doi:10.1016/j.jconhyd.2015.10.001.
30. Boroumand, A. and L. M. Abriola. 2015. On the upscaling of mass transfer rate expressions for interpretation of source zone partitioning tracer tests. *Water Resources Research*, 51(2): 832-847, DOI: 10.1002/2014WR015767.
31. Zhang, H., I. Mendoza-Sanchez, E. L. Miller, Fellow, IEEE, and L. M. Abriola. 2015. Manifold regression framework for characterizing source zone architecture. *IEEE Transactions on Geoscience and Remote Sensing*, vol. 54, no. 1, pp. 3–17, doi:10.1109/TGRS.2015.2448086.
32. Taghavy, A., K. D. Pennell, and L.M. Abriola. 2015. Modeling coupled nanoparticle aggregation and transport in porous media: A Lagrangian approach. *Journal of Contaminant Hydrology*, 172: 48-60, doi:10.1016/j.jconhyd.2014.10.012.
33. Becker, M.D., Y. Wang, K. D. Pennell, and L. M. Abriola. 2015. A multi-constituent site blocking model for nanoparticle and stabilizing agent transport in porous media. *Environmental Science: Nano*, DOI:10.1039/C4EN00176A
34. Becker, M. D., Y. Wang Y., J. L. Paulsen, Y. Q. Song, L. M. Abriola, and K. D. Pennell. 2014. In situ measurement and simulation of nano-magnetite mobility in porous media subject to transient salinity. *Nanoscale*, DOI: 10.1039/c4nr05088f.
35. Wang, Y.; M. D. Becker, V. L. Colvin, L. M. Abriola, and K. D. Pennell. 2014. Influence of residual polymer on nanoparticle deposition in porous media. *Environmental Science & Technology*, 48:10664-10671.
36. Taghavy, A., A. Mittelman, Y. Wang, K. D. Pennell, and L. M. Abriola. 2013. Mathematical modeling of the transport and dissolution of citrate-stabilized silver nanoparticles in porous media. *Environmental Science & Technology*, 47:8499-8507, DOI 10.1021/es400692r.
37. Mittelman, A. M., A. Taghavy, Y. Wang, L. M. Abriola, and K. D. Pennell. 2013. Influence of dissolved oxygen on silver nanoparticle mobility and dissolution in water-saturated quartz sand. *Journal of Nanoparticle Research*, 15:1765, DOI 10.1007/s11051-013-1765-4.
38. Wang Y., H. Zhu, M. D. Becker, J. Englehart, L.M. Abriola, V. L. Colvin, K. D. Pennell. 2013. Effect of surface coating composition on quantum dot mobility in porous media. *Journal of Nanoparticle Research*, 15:1805, DOI 10.1007/s11051-013-1805-0.

39. Chen, M., L. M. Abriola, B. K. Amos, E.J. Suchomel, K. D. Pennell, F. E. Löffler, and J. A. Christ. 2013. Microbially enhanced dissolution and reductive dechlorination of PCE by a mixed culture: Model validation and sensitivity analysis. *Journal of Contaminant Hydrology*, 151:117–130.
40. Aghasi, A., I. Mendoza-Sanchez, E. L. Miller, C. A. Ramsburg, and L. M. Abriola. 2013. A geometric approach to joint inversion with applications to contaminant source zone characterization. *Inverse Problems*, vol. 29, no. 11, paper 115014.
41. Wang, Y., Y. Li, J. Costanza, L. M. Abriola, and K. D. Pennell. 2012. Enhanced mobility of fullerene (C60) nanoparticles in the presence of stabilizing agents. *Environmental Science & Technology*, 46(21):11761-11769, DOI: 10.1021/es302541g.
42. Miller, E., L. M. Abriola, and A. Aghasi. 2012. Environmental remediation and restoration: Hydrological and geophysical processing methods. *IEEE Signal Processing Magazine*, 29(4), 16-26.
43. Ervin, R.E., A. Boroumand, L. M. Abriola and C. A. Ramsburg. 2011. Kinetic limitations on tracer partitioning in ganglia dominated source zones. *Journal of Contaminant Hydrology*, 126: 195–207.
44. Christ, J. A., K. D. Pennell, and L. M. Abriola. 2012. Quantification of subsurface fluid saturations from high-resolution source zone images. *Water Resources Research*, 48, W01517, DOI:10.1029/2011WR010400.
45. Taghavy, A., J. Costanza, K. D. Pennell, L. M. Abriola. 2010. Effectiveness of nano-scale zero-valent iron for treatment of a PCE-DNAPL source zone. *Journal of Contaminant Hydrology*, 118:128-142.
46. Christ, J. A., C. A. Ramsburg, K. D. Pennell, and L. M. Abriola. 2010. Predicting DNAPL mass discharge from pool-dominated source zones. *Journal of Contaminant Hydrology*, 114:18-34.
47. O'Carroll, D.M., K.G. Mumford, L. M. Abriola, and J. I. Gerhard. 2010. Influence of wettability variations on dynamic effects in capillary pressure. *Water Resources Research*, 46, W08505, doi: 10.1029/2009WR008712.
48. Wang, Y, Y. Li, H. Kim, S.L. Walker, L. M. Abriola and K. D. Pennell. 2010. Transport and retention of fullerene nanoparticles in natural soils. *Journal of Environmental Quality*, 39:1925-1933.
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24. Galarza, G., J. Carrera, L. M. Abriola, and A. Medina. 1992. Comparison of several formulations for the time discretization of non-linear flow equations, Proceedings International Conference on Computational Methods in Water Resources, Denver, CO, June 1992.
25. Rathfelder, K. M., L. M. Abriola, S. Yadav, and M. Maiza. 1991. Simulation of immiscible phase contaminant transport on IBM/AT personal computers, computer methods in water resources II, Vol 1: Groundwater modeling and pressure flow, Sari *et al.*, ed., Proceedings of the Second International Conference, Marrakesh, Morocco, February 1991, 153-162, Springer-Verlag, 1991.
26. Abriola, L. M., Y-M. Chen, and T. M. Vogel. 1991. Investigation and prediction of the biodegradation of benzene, toluene, and xylene (BTX) in sandy aquifer materials, Proceedings International Hydrology and Water Resources Symposium, 429-434, Perth, Australia, October 1991.
27. Abriola, L. M., C-S. Fen, and H. W. Reeves. 1992. Numerical simulation of unsteady organic vapor transport in porous media using the dusty gas model, Proceedings IAHS Conference on Subsurface Contamination by Immiscible Fluids, Calgary, Alberta, Canada, April 1990, 195-202, A. A. Balkema, 1992.

28. Lang, J. R., L. M. Abriola, and A. Gamliel. 1990. Comparison of P, H, and R-version adaptive finite element solution for unsaturated flow in porous media, computational methods in subsurface hydrology, Proceedings VIII International Conference on Computational Methods in Water Resources, Venice, Italy, June 11-15, 187-192, Springer-Verlag, 1990.
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30. Abriola, L. M. 1986. Finite element solution of the unsaturated flow equation using hierarchic basis functions, Proceedings VI International Conference on Finite Elements in Water Resources, Lisbon, Portugal, June 1-5, 125-133, Springer-Verlag, 1986.

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1. Abriola, et al. 2019. Development of an Integrated Field Test/Modeling Protocol for Efficient In Situ Bioremediation Design and Performance Uncertainty Assessment, SERDP Project ER-2311 Final Report. [https://www.serdp-estcp.org/Program-Areas/Environmental-Restoration/Contaminated-Groundwater/Persistent-Contamination/ER-2311/ER-2311/\(modified\)/06Jun2019](https://www.serdp-estcp.org/Program-Areas/Environmental-Restoration/Contaminated-Groundwater/Persistent-Contamination/ER-2311/ER-2311/(modified)/06Jun2019)
2. Abriola, L.M., et al. 2013. Metric Identification and Protocol Development for Characterizing DNAPL Source Zone Architecture and Associated Plume Response, SERDP Project ER-1612 Final Report. <https://www.serdp-estcp.org/Program-Areas/Environmental-Restoration/Contaminated-Groundwater/Persistent-Contamination/ER-1612/ER-1612>
3. Abriola, L.M., et al. 2008. Development of Assessment Tools for Evaluation of the Benefits of DNAPL Source Zone Treatment, SERDP Project ER-1293 Final Report. <https://www.serdp-estcp.org/Program-Areas/Environmental-Restoration/Contaminated-Groundwater/Persistent-Contamination/ER-1293>
4. Abriola, L. M., J. Lang, and K. Rathfelder. 1997. Michigan Soil vapor extraction remediation (MISER) model: A computer program to model soil vapor extraction and bioventing of organic chemicals in unsaturated geological material, US EPA, EPA/600/R-97/099.
5. Abriola, L. M., K. Rathfelder, M. Maiza, and S. Yadav. 1992. VALOR Code Version 1.0: A PC code for simulating immiscible contaminant transport in subsurface systems, Electric Power Research Institute TR-101018.
6. Abriola, L. M. 1988. Multiphase flow and transport models for organic chemicals: A review and assessment, Electric Power Research Institute, EPRI EA-5976.
7. Abriola, L. M. and W. J. Weber, Jr. 1987. Summary Report: Forum on NSF research activities in subsurface systems, NTIS PB88-103163, 1987.

Other Reviewed Publications

1. Abriola, L. M., editorial: An appeal to the AGU membership, *EOS, Transactions, American Geophysical Union*, Volume 87, Number 13, March 2006.

2. Ramsburg, C. A. and L. M. Abriola, Book review: Soil and groundwater contamination: Non-aqueous phase liquids, *Ground Water*, Volume 44, No 2, April 2006.
3. Abriola, L. M., Contaminant source zones: Remediation or perpetual stewardship?, Guest Editorial, *Environmental Health Perspectives*, 113(7): A148-149, July 2005.
4. Lemke, L. D., L. M. Abriola, and P. Goovaerts, Correction to “Dense non-aqueous phase liquid (DNAPL) source zone characterization: Influence of hydraulic property correlation on predictions of DNAPL infiltration and entrapment”, *Water Resources Research*, DOI 10.1029/2005WR004213, 2005.
5. Abriola, L. M., Are we slighting female colleagues? reply to letter posted to *EOS*, 85 (41), 402, 2004.
6. Abriola, L. M. and J. M. Bahr, IAHS/AGU Symposium on groundwater contamination, *Environmental Geology and Water Science*, 17(3), 171-175, 1991.
7. Abriola, L. M., Mathematical modeling of the multiphase migration of organic compounds in a porous medium, Ph.D. Thesis, Princeton University, Sept. 1983.

Non-reviewed Conference Papers

1. Abriola, L. M and M. W. Davies. 2006. Attracting and retaining women in engineering: The tufts experience, CHERI policy research conference: Doctoral education and the faculty of the future. October 8-9, 2006, Cornell University, Ithaca, NY [**invited paper**].
2. Abriola, L. M., D. M. O’Carroll, S. A. Bradford, and T. J. Phelan. 2006. Compositional effects on interfacial properties in contaminated systems: implications for organic liquid migration and recovery, *In Computational Methods in Water Resources*, Vol 1, Proc of the XIV Intl Conf, June 23-28, Delft, The Netherlands, *Developments in Water Science* 47, Hassanizadeh, S. M., R. J. Schotting, W. G. Gray, and G. F. Pinder, eds., 795-802, Elsevier, Amsterdam, The Netherlands, 2002 (**plenary paper**).
3. Lemke, L. D., L. M. Abriola, and P. Goovaerts. 2002. Exploration of the influence of hydraulic property correlation on predictions of DNAPL infiltration and entrapment, *In Groundwater 2002*, Proc. of the International Conference on Groundwater Research, Berkeley, CA, March 25-28, 2002.
4. Rubin, H., K. Rathfelder, L. M. Abriola, M. Spiller, G. Demny, and J. Kongeter. 2001. Reclamation of NAPL contaminated fractured permeable formation, *In Proc. 4th International Austrian-Israeli Technion Symposium cum Industrial Forum: Preserving the Quality of our Water Resources*, April 23–25, Vienna, Austria, 2001.
5. Abriola, L. M. 2000. Surfactant enhanced DNAPL recovery in heterogeneous media: Lessons learned from laboratory and numerical investigations, *In Contaminated Site Remediation: From Source Zones to Ecosystems*, Proc. 2000 CSRC, Melbourne, Victoria, Australia, 4-8 Dec. 2000, C. D. Johnston, ed., Vol 2, 579-587, Centre for Groundwater Studies, CSIRO Land and Water, Wembley, W.A., 2000 [**keynote paper**].
6. Abriola, L. M., C. D. Drummond, K. M. Rathfelder, L. D. Lemke, E. J. Hahn, and K. D. Pennell. 2000. Surfactant enhanced remediation: Application of numerical models in pilot test design, *In Groundwater 2000*, Proc. of the International Conference on Groundwater Research, Copenhagen,

- Denmark, 6-8 June 2000, P.L. Bjerg, et al., eds., 33-36, A.A. Balkema, Rotterdam, The Netherlands, 2000.
7. Drummond, C. D., L. D. Lemke, K. M. Rathfelder, E. J. Hahn, and L. M. Abriola. 2000. Simulation of surfactant-enhanced PCE recovery at a pilot test field site, *In Treating Dense Nonaqueous-Phase Liquids (DNAPLs): Remediation of Chlorinated and Recalcitrant Compounds* (G. B. Wickramanayake, A. R. Gavaskar, and N. Gupta eds.), 77-84, Battelle Press, Columbus, 2000.
 8. Lang, J. R., J. K. Landrum, C. D. Drummond, and L. M. Abriola, MISER (Michigan Soil-Vapor Extraction Remediation Model): Development of a parallel environmental remediation application code, *In Proceedings HPC 2000 – Sixth International Conference on Applications of High-Performance Computers in Engineering*, January 26-28, 2000, Maui, Hawaii.
 9. Glascoe, L. G., S. J. Wright, and L. M. Abriola. 1999. Numerical modeling of phase change during bioventing: Influence of injection flow rates and thermal conductivity, *In Proceedings of the XXVIII IAHR Congress*, August 22-27, 1999, Graz, Austria.
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 11. Abriola, L. M. 1999. Surfactant-enhanced technologies for subsurface environmental restoration, *In Proc. of the V International Symposium: Chemistry Forum*, April 19-21, 1999, Warsaw, Poland [plenary paper].
 12. Bradford, S. A., L. M. Abriola, and K. M. Rathfelder, 1998. Simulated entrapment and dissolution of organic liquids in chemically heterogeneous porous media, *In Proceedings of the 1998 Symposium on Environmental Models and Experiments Envisioning Tomorrow (EnviroMEET '98): Behavior and Remediation of Nonaqueous Phase Contaminants in the Subsurface*, July 20-23, Irvine, CA, 7-16, 1998.
 13. Rathfelder, K. M., T. P. Taylor, L. M. Abriola, and K. D. Pennell. 1998. Simulation of the surfactant-enhanced solubilization of PCE in bench-scale laboratory studies, *In Proc. Remediation of Chlorinated and Recalcitrant Compounds*, 1(2):91-96, Battelle Press, Columbus, 1998.
 14. Lang, J. R., K. M. Rathfelder, and L. M. Abriola. 1997. A numerical analysis of factors influencing bioventing performance, *In In Situ and On-Site Bioremediation: Volume 1, Fourth International In Situ and On-Site Bioremediation Symposium*, R. C. Alleman and A. Leeson, eds., Battelle Press, Columbus, OH, 323-328, 1997.
 15. Chen, Y-M., L. M. Abriola, and M. J. Barcelona, Simulation of intrinsic bioremediation processes at Wurtsmith Air Force Base, Michigan, *In In Situ and On-Site Bioremediation: Volume 1, Fourth International In Situ and On-Site Bioremediation Symposium*, R.C. Alleman and A. Leeson, eds., Battelle Press, Columbus, OH, 55-60, 1997.
 16. Dekker, T. J. and L. M. Abriola. 1994. Dissolution and enhanced solubilization of entrapped NAPLs: Implications of laboratory scale observations on field scale remediation, *Proceedings of the AIH Conference on Toxic Substances and the Hydrologic Sciences*, April 1994, Austin, TX, 290-301, 1994 [keynote address].

17. Hoffman, G. D., D. R. Gan, L. M. Abriola, and K. D. Pennell. 1993. Rate limited processes that affect the performance of soil vapor extraction, Proceedings of the Superfund XIV Conference and Exhibition, December, 1993, 960–967, Washington, DC, 1993.
18. Abriola, L. M., K. D. Pennell, and A. M. Adinolfi. 1993. Surfactant enhanced remediation of soils contaminated by dense non-aqueous phase liquids (DNAPLs), Proceedings National AICHE Meeting, August 16–20, Seattle, WA, 1993.
19. Abriola, L. M., T. J. Dekker, and K. M. Rathfelder. 1993. Recent advances in the modeling of organic liquid contaminant migration and persistence in aquifer systems, Proceedings of the Second USA/CIS Joint Conference on Environmental Hydrology and Hydrogeology, May 10-12, 303-316, Washington, DC, 1993.
20. Abriola, L. M. and Y-M. Chen. 1993. A mathematical model of BTX biodegradation and transport: Comparison with experimental measurements, Proceedings of The CoBioREM Conference, Lansing, MI, March 1993, III-87 - III-89, MOGA, 1993.
21. Abriola, L. M. and K. Rathfelder. 1992. Comparison of numerical modeling approaches for subsurface immiscible contaminant transport, Proceedings of the ASCE Water Forum '92, Baltimore, August 1992, 275-280, ASCE, 1992.
22. Abriola, L. M., S. E. Powers, and W. J. Weber, Jr. 1992. Investigation of the dissolution of non-aqueous phase organic liquid contaminants in soils, Proceedings of the NATO-ASI Conference on Migration and Fate of Pollutants in Soils and Subsoils, Maratea, Italy, May-June, 1992.
23. Abriola, L. M., G. Galarza, J. Carrera, and A. Medina. 1992. Comparison de diversas formulaciones para la integracion temporal de ecuaciones de flujo no lineal, Comunicaciones Simposio de Hidrogeologia Alicante, Spain, March 23-27, 483-497, Asociation Espanola de Hidrologia Subterran, 1992.
24. Abriola, L. M. 1990. A modeling perspective on multiphase migration of organic chemicals in the subsurface, Proceedings of the 4th Hellenic Hydrotechnical Congress on Water Resources and Regional Development, March 14-17, Iraklio, Crete, Greece, 781-790, 1990 **[Invited paper]**.
25. Abriola, L. M. and H. W. Reeves. 1989. Slightly miscible organic chemical migration in porous media: Present and future directions in modeling, Proceedings of the First EPRI/EPA Environmental Research Conference, on Groundwater Quality and Waste Disposal, Washington, D.C., May 3, 1989, EPRI EN-6749, 15-1 - 15-24, March 1990.
26. Abriola, L. M. and G. F. Pinder. 1985. Two dimensional numerical simulation of subsurface contamination by organic compounds - A multiphase approach, Proceedings of the Computer Applications in Water Resources, ASCE Specialty Conference, Buffalo, June 10-12, 275-284, 1985 **[invited paper]**.
27. Pinder, G. F., H. J. Ramey, Jr., A. Shapiro, and L. M. Abriola. 1979. Block response to reinjection in a fractured geothermal reservoir, Proceedings of the Fifth Annual Workshop on Geothermal Reservoir Engineering, Dec. 12-14, Stanford University, 189-196, 1979.

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1. Abriola, L. M., A. H. Demond, and K. F. Hayes, *Summary Report: Second forum on NSF research activities in subsurface systems*, 1994.
2. Abriola, L. M. and G. F. Pinder, Migration of petroleum products accidentally introduced into the subsurface through spills, *Water Resources Program Report*, 81-WR-9, Princeton University, 53p.,1981.

Additional Invited, Keynote and Plenary Addresses (not cited above)

Abriola, L.M., Modeling the Transport and Retention of ‘Emerging’ Surface-Active Contaminants In the Vadose Zone, **Keynote Address**, 10th International Conference on Water Resources and Arid Environments, Riyadh, Saudi Arabia, December 26-27, 2022 (virtual presentation).

Abriola, L.M. and M. Arshadi. 2022. Recent Advances in Modeling PFAS Transport and Retention in AFFF Source Areas, **Invited Platform Presentation**, PFAS-Σ-IT International PFAS Summit, April 4-5, 2022 (virtual presentation).

Abriola, L.M. 2021. Remediation of Legacy Sites: Lessons Learned and Future Challenges -An Academic’s Perspective, RemTEC Technology Summit (virtual) March 9-11, 2021 (**keynote panel presentation**).

Abriola, L.M. 2020. “Experimental and Modeling Investigations of PFAS Transport and Retention in the Unsaturated Zone,” GSA 2000, T181. Fate and Transport of PFAS in the Geologic Landscape, October 30, 2020 (invited presentation).

Abriola, L.M. 2020. “Laboratory and Modeling Investigation of PFAS Transformation, Transport, and Retention in AFFF Source Areas,” SERDP & ESTCP Webinar Series (#116), July 23, 2020 (invited webinar).

Abriola, L.M. 2019, “Coupled Laboratory and Mathematical Modeling Investigations of PFAS Transport, Retention, and Transformation in Soil and Groundwater,” SERDP/ESTCP Symposium, Washington, DC, December 4, 2019 (invited platform presentation).

Abriola, L.M. 2019. “A Mathematical Modeling Framework for Conformance Control using Nanocapsule Technology” *Porous Media: Structure, Flow, and Dynamics Workshop*, Cambridge, MA, November 1, 2019 (invited presentation).

Abriola, L.M. 2019. “Subsurface Contaminant Source Zone Characterization and Uncertainty Quantification Using Discriminative Random Fields,” Conference on *Modern Challenges in Imaging, in the Footsteps of Allan MacLeod Cormack*, Medford, MA, August 7, 2019 (**plenary presentation**).

Abriola, L.M. 2019. “Addressing the Challenges in Source Zone Characterization and Remediation: Recent Progress,” *RemTEC Technology Summit*, Denver, CO, February 27, 2019 (**keynote presentation**).

- Abriola, L.M. 2018. "Addressing the Challenges in Subsurface Contaminant Source Zone Characterization and Remediation," 2018 Northeast Superfund Research Program Meeting, Woods Hole, MA, March 2018 (invited presentation).
- Abriola, L.M., 2014. "Attracting and Retaining Women in Engineering and the Physical Sciences: The Academic Experience," *First TMS Summit on Creating and Sustaining Diversity*, Washington, DC, July 29, 2014 (**keynote presentation** and panel member)
- Abriola, L.M., 2013. "On Nanomaterial Transport in the Subsurface: Emerging Pollutants and Novel Characterization Tools," *Engineering Mechanics Institute Conference*, Northwestern University, Evanston, IL, August 5, 2013 (**keynote presentation**)
- Abriola, L. M., A. Boroumand, N. Capiro, J. A. Christ, R. E. Ervin, I. Mendoza-Sanchez, E. L. Miller, K. D. Pennell, C. A. Ramsburg, D. I. Walker, H. Zhang, 2012. "Characterization of DNAPL Source Zone Architecture and Prediction of Associated Plume Response: Progress and Perspectives", *AGU Fall Meeting*, December 6, 2012. (invited presentation)
- Abriola, L.M., 2010. "A Role for Engineering Schools in K-12 Education?," ASEE Engineering Deans Institute, Ft. Lauderdale, FL, April 12, 2010. (invited presentation)
- Abriola, L. M., 2010. "Modeling Nanoparticle Transport in Saturated Porous Media – Alternatives and Challenges," *AGU Fall Meeting*, December 16, 2010. (invited presentation)
- Abriola, L. M., 2009. "Engineering Education in K-12: Higher Education Perspective", Presented at: *The NAE Symposium on K-12 Engineering Education*, September 8, 2009, Washington, DC. (invited presentation)
- Abriola, L. M., Y. Li, Y. Wang, and K. D. Pennell. 2009. "Coupled Modeling and Experimental Investigations of Nanocarbon Transport in Subsurface Media", *Environmental Colloid and Interfacial Processes V, 83rd ACS Colloid & Surface Science Symposium*, June 18, 2009, Columbia University. (**keynote presentation**)
- Abriola, L. M., 2008. "Characterization of DNAPL Source Zones: Progress and Challenges", presented at *Water Resources Systems Analysis: the Contributions of Bill Yeh Symposium*, December 2008, UCLA. (invited presentation)
- Abriola, L. M., 2008. "Engineering Education for Societal Impact: The Tufts Experience", Presented at: *The NAE Engineering, Social Justice, and Sustainable Community Development Workshop*, October 2-3, 2008, Washington, DC. (invited presentation)
- Abriola, L. M., 2006. "Exploring the Influence of Bioremediation on Dissolution in DNAPL Source Zones", *AGU Fall Meeting*, December 13, 2006, San Francisco, CA. (invited presentation)
- Abriola, L. M., 2006. "Subsurface Contamination: Application of Innovative Technology or Perpetual Stewardship", *EPA NARPM / TSP Annual Training Conference*, June 19, 2006, New Orleans, LA. (invited platform presentation)
- Abriola, L. M., 2005. "DNAPL Source Zones: Progress and Challenges for Site Management", *Groundwater Resources Association of California Symposium on DNAPL Source Zone Characterization and Remediation*, December 7-8, 2005, San Francisco, CA. (keynote presentation)

- SERDP Partners in Environmental Technology Technical Symposium and Workshop*, November 29 - December 1, 2005, Washington, D.C. (invited platform presentation)
- Abriola, L. M., 2005. "DNAPL Source Zones: Progress and Challenges for Site Management", *21st Annual International Conference on Soils, Sediments, and Water*, October 20, 2005, U Mass, Amherst, MA. (**keynote luncheon speaker**)
- Abriola, L. M., 2004. "Use of Models in DNAPL Source Zone Remediation Assessment: Exploring the Potential Benefits of Partial Mass Removal in Non-Uniform Formations", *GSA Meeting*, November 7-10, 2004, Denver, CO. (invited presentation)
- Abriola, L. M., 2003. "Assessing the Benefits of DNAPL Source Zone Treatment", Platform presentation at *SERDP/ESTCP Partners in Environmental Technology Technical Symposium & Workshop*, December 2-4, 2003, Washington, D.C. (invited platform)
- Abriola, L. M., 2003. "Effectiveness of DNAPL Source Zone Treatment in Heterogeneous Media: The Role of Interphase Mass Transfer", *226th ACS National Meeting*, September 7-11, 2003, New York, NY. (invited presentation)
- Abriola, L. M., A. H. Demond, H. Hsu, D. M. O'Carroll, T. J. Phelan, C. A. Polityka, and J. L. Ryder. 2003. "Compositional Effects on Interfacial Properties in Contaminated Systems: Implications for Organic Liquid Migration and Recovery", *225th ACS National Meeting*, March 23-27, 2003, New Orleans, LA. (invited presentation)
- Abriola, L. M., C. A. Ramsburg, K. D. Pennell, F. E. Löffler, M. Gamache, and E. A. Petrovskis. 2003. "Post-Treatment Monitoring and Biological Activity at the Bachman Road Surfactant-Enhanced Aquifer Remediation Site", *225th ACS National Meeting*, March 23-27, 2003, New Orleans, LA. (invited presentation)
- Abriola, L. M., T. J. Phelan, and D. M. O'Carroll. 2003. "Exploring the Influence of Medium Wettability on DNAPL Migration and Retention Behavior: Bench Scale Experiments and Field Scale Implications", *SIAM Conference on Mathematical and Computational Issues in the Geosciences*, March 17-20, 2003, Austin, TX. (invited presentation)
- Abriola, L. M., 2002. "Surfactant Enhanced DNAPL Source Zone Remediation: Results of a Field Demonstration and Implications for Bioavailability", *US EPA Symposium on In Situ Treatment of Groundwater Contaminated with Non-aqueous Phase Liquids: Fundamentals and Case Studies*, Dec 10-12, 2002, Chicago, IL. (invited presentation)
- Abriola, L. M., 2002. "Surfactant Enhanced DNAPL Source Zone Remediation: Results of a Field Demonstration and Implications for Bioavailability", *Conference on Bioremediation and Biodegradation: Current Advances in Reducing Toxicity, Exposure and Environmental Consequences*, Asilomar Conference Center, June 9-12, 2002, Pacific Grove, California. (invited presentation)
- Abriola, L. M., 2001. "Modeling DNAPL Migration and Persistence: Twenty Years of Progress and Challenges for the Future, Thirty-Five Years of Groundwater Modeling: A Tribute to George Pinder", *AGU Fall Meeting*, Dec 10-14, 2001, San Francisco, CA. (invited presentation)

- Abriola, L. M., 2001. "Modeling Organic Liquid Contaminant Migration and Recovery – Successes, Challenges, and Future Directions", *Sixth SIAM Conference on Mathematical and Computational Issues in the Geosciences*, June 11-14, 2001, Boulder, CO. (invited presentation)
- Abriola, L. M., C. D. Drummond, L. D. Lemke, K. M. Rathfelder, and K. D. Pennell. 2001. "Use of Mathematical Models in the Design and Performance Evaluation of a Surfactant Flushing Demonstration at the Bachman Road Site", *AGU Symposium on Physicochemical Hydrodynamics of Nonaqueous Phase Liquid in Porous and Fractured Media*, AGU Spring Meeting, May 29-June 2, 2001, Boston, MA. (invited presentation)
- Abriola, L. M., 2000. "Investigation of the Entrapment and Surfactant Enhanced Recovery of Nonaqueous Phase Liquids", *International Workshop on Subsurface Flow and Transport Phenomena*, October 23-27, 2000, Technical University of Delft. (invited presentation)
- US DOE Environmental Management Science Program, National Workshop 2000, *Science Advancing Solutions*, April 24-28, 2000, Atlanta, GA. (invited presentation)
- Abriola, L. M., 1999. "How Useful are Laboratory-Based Numerical Models for the Assessment of Remedial Performance?", *NGWA 1999 Thesis Conference - Remediation of Subsurface Contaminants: The Meaning and Measure of Success*, November 12-15, 1999, Amelia Island, FL. (invited presentation)
- Abriola, L. M., 1999. "Investigation of the Entrapment and Surfactant-Enhanced Recovery of Nonaqueous Phase Liquids in Heterogeneous Media", *EPA Conference on Innovative Clean-up Approaches*, November 2-4, 1999, Bloomingdale, IL. (invited presentation)
- Abriola, L. M., 1996. "Organic Liquid Entrapment and Persistence in the Subsurface", 48th Annual NGWA National Convention, Dec. 1996, Las Vegas, NV. (**Darcy keynote address**)
- Abriola, L. M., 1996. "Organic Liquid Entrapment and Persistence in the Subsurface, Geophysical and Biological Issues in Subsurface Remediation", Engineering Research Center, Feb. 1996, University of Cincinnati. (**keynote address**)
- Abriola, L. M., K. D. Pennell, and W. J. Weber, Jr. 1995. "Persistence and Interphase Mass Transfer of Organic Contaminants in the Unsaturated Zone: Experimental Observations and Mathematical Modeling", *Vadose Zone Hydrology: Cutting Across Disciplines*, Kearney Foundation Conference, Sept. 1995, Davis, CA. (**keynote address**)
- Abriola, L. M., J. R. Lang, and K. M. Rathfelder. 1995. "A Finite Element Model of Bioventing Using a System of Coupled Nonlinear Conservation Laws with Reaction", *Third SIAM Conference on Mathematical and Computational Issues in the Geosciences*, February, 1995, San Antonio, TX. (**plenary address**)
- Abriola, L. M., K. D. Pennell, and G. A. Pope. 1994. "Impact of Surfactant Flushing on the Solubilization and Mobilization of Dense Non-Aqueous Phase Liquids", *Preprints of Papers, Division of Environmental Chemistry, American Chemical Society, 207th National Meeting*, March 13–18, 1994, 619–621, San Diego, CA. (invited presentation)
- Abriola, L. M., K. D. Pennell, and A. D. Adinolfi. 1993. "Surfactant Enhanced Remediation of Soils Contaminated by Dense Non-Aqueous Phase Liquids (DNAPLs)", *AICHE Summer National Meeting*, August 1993, Seattle, WA. (invited presentation)

Abriola, L. M., and K. Rathfelder. 1993. "Solution Accuracy in Numerical Simulations of Multiphase Flow", *IGWMC Groundwater Modeling Conference*, June 1993, Golden, CO. (**keynote address**)

Powers, S. E., L. M. Abriola, J. S. Dunkin, and W. J. Weber, Jr. 1991. "Experimental Assessment of the Impact of Pore Structure on Interphase Mass Transfer Rates and Blob Distributions During NAPL Dissolution Processes", *AGU Symposium on Recent Advances in the Understanding of Nonideal Interphase Transport in Porous Media*, May 1991, Baltimore, MD. (invited presentation)

Progress and Perspective, presented at *Characterization of Transport Phenomena in the Vadose Zone*, a Workshop sponsored by SSSA and AGU, April 1991, Tucson, AZ. (invited presentation)

Abriola, L. M. 1987. "Modeling Miscible/Immiscible Organic Transport: An Assessment with Example Simulations", *1987 Annual Meeting of the Geological Society of America*, October 26, 1987, Phoenix, Arizona. (invited presentation)

Abriola, L. M. and W. G. Gray. 1987. "Incorporation of Surface Effects into the Multiphase Mixture Balance Laws", *24th Annual Meeting of the Society of Engineering Science*, September 22, 1987, Salt Lake City, Utah. (invited presentation)

Abriola, L. M. and W. G. Gray. 1984. "The Importance of the Interface in Modeling Multiphase Flow", *AGU Symposium on Miscible and Immiscible Transport in Ground Water*, May 15, 1984, Cincinnati, Ohio. (invited presentation)

Invited Lectures/Seminars

Invited Seminar, Massachusetts Institute of Technology, Parson's Lab, October 2020.

Invited Seminar, Auburn University, Department of Civil and Environmental Engineering, November 2019

Invited Seminar, Brown University, Superfund Research Program Center, October 2019.

Invited Seminar, Carnegie Mellon University, Department of Civil and Environmental Engineering, November 2018.

Invited Speaker, National Science Foundation National Action Workshop on STEM Teacher Preparation: *Engaging Schools and Colleges of Engineering in the Preparation of a New Generation of Cross-Trained STEM Teachers*, Columbus Ohio, June 2017.

Cullen College Elizabeth Rockwell Distinguished Lecture, University of Houston, March 2016

2015-2016 Chemical Engineering Distinguished Lecturer Series, University of Utah, November 2015.

Commencement Address, Executive Leadership in Academic Technology and Engineering Program (ELATE), Drexel University, March 2015.

Civil and Environmental Engineering Annual Distinguished Lecture, Northwestern University, May 2014.

Mellon Mutual Mentoring Team Grant Seminar, University of Massachusetts, Amherst, September 2013.

Honoring the Career and Contributions of University of Illinois Alumnus, George Pinder, The XIX International Conference on Computational Methods in Water Resources, University of Illinois, Urbana-Champaign, June 2012.

Civil and Environmental Engineering Seminar, Rensselaer Polytechnic Institute, March 2012.

Annual Distinguished Ryckman Lecture, Washington University, March 2011.

Charles & Mary O' Melia Lecture in Environmental Sciences, Johns Hopkins University, October 2010.

CESEP Distinguished Lecture, Colorado School of Mines, November 2008.

Scott Turner Lecture Series, Department of Geological Sciences, University of Michigan, Ann Arbor, January 2004.

School of Civil and Environmental Engineering, Georgia Institute of Technology, Atlanta, GA, April 2003.

Department of Civil and Environmental Engineering, The University of Texas at Austin, May 2002.

Department of Earth and Planetary Sciences, Johns Hopkins University, Baltimore, MD, April 2002.

Department of Chemical Engineering, Yale University, New Haven, CT, April 2002.

Department of Civil Engineering, Purdue University, West Lafayette, IN, March 2002.

Department of Civil and Environmental Engineering, Massachusetts Institute of Technology, Boston, MA, November 2001.

Department of Geological and Environmental Sciences, Stanford University, Stanford, CA, October 2001.

Department of Civil and Environmental Engineering, The University of Illinois, Champaign, IL, April 2001.

Department of Civil and Environmental Engineering, The University of Connecticut, Hartford, CT November 2000.

Department of Applied Mathematics, University of Colorado, Denver, CO, October 2000.

Department of Civil and Environmental Engineering, Duke University, Durham, NC, August 2000.

Department of Land, Air, and Water Resources, University of California at Davis, Davis, CA, May 2000.

1999 IBM Women in Engineering and Science Lecture Series, Dept. of Civil Engineering and Geological Sciences, University of Notre Dame, January 1999.

Department of Environmental Sciences, Rutgers University, New Brunswick, NJ, April 1998.

Department of Hydrodynamics and Water Resources, Technical University of Denmark, Lyngby, Denmark, April 1998.

As the 1996 NWGA Distinguished Darcy Lecturer, Professor Abriola lectured at some 42 Universities and research facilities worldwide over the period Feb. 96 - June 97

Environmental Sciences and Engineering, California Institute of Technology, Pasadena, CA, November 1995.

Department of Environmental Engineering, University of North Carolina, Chapel Hill, SCB Seminar Series, April 1995.

Illinois DENR Hazardous Waste Research and Information Center, January 1995.

Department of Civil and Environmental Engineering, Vanderbilt University, April 25, 1994.

Spring 1993 Seminar Series, Surface and Subsurface Hydrology, The University of California at Berkeley, April 19, 1993

Curso Internacional de Hidrologia Subteranea, Barcelona, Spain, April 23, 1992.

Ford Motor Company, Scientific Research Laboratory, Dearborn, MI, January 21, 1992.

Department of Applied Mathematics, Rice University, Houston, TX, November 25, 1991.

Intera, Inc., Austin, TX, November 22, 1991.

Department of Civil Engineering, The University of Texas at Austin, TX, November 20, 1991.

Department of Civil Engineering, Texas A&M University, College Station, TX, October 23, 1991.

Holcomb Research Institute, International Ground Water Modeling Center, November 7, 1988.

Energy and Environmental Systems Division, Argonne National Laboratory, March 22, 1988.

Department of Civil Engineering, The University of California, Davis, CA, June 4, 1987.

Science Research Club, The University of Michigan, Ann Arbor, MI, April 7, 1987.

Applied Earth Sciences, Stanford University, Stanford, CA, February 12, 1987.

Research and Development, The Dow Chemical Company, Midland, MI, October 14, 1986.

PYI Forum on Environmental Engineering, Duke Univ., Durham, NC, September 25, 1986.

Environmental Science Program, Oregon Graduate Center, Beaverton, OR, April 29, 1986.

Department of Geology, Indiana University, Bloomington, IN, February 17, 1986.

Environmental Sciences Division, Lawrence Livermore National Lab, Livermore, CA, December 12, 1985.

Environmental Activities Staff, General Motors Corporation, Warren, Michigan, November 18, 1985.

Hydraulics and Water Resources Seminar, Univ. of Illinois, Champaign-Urbana, IL, September 12, 1985.

DOE ISIS Seminar on Supercomputers in Hydrology - Future Directions, Purdue University, West Lafayette, IN, September 11, 1985.

Institute for Groundwater Research, University of Waterloo, Waterloo, Ontario Canada, June 21, 1985.

The Environmental Studies Institute Joint Seminar Series on Hazardous Wastes/Groundwater Contamination, Drexel University, Philadelphia, PA, April 3, 1984.

United States Geological Survey, Reston, VA, October 14, 1983.