

Alison Rachel Keimowitz

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EDUCATION

- Ph.D. and M.Phil.**, *Columbia University* 2006
Department of Earth & Environmental Sciences at Lamont-Doherty Earth Observatory
Dissertation: *Arsenic mobility in groundwaters at contaminated sites*
Advisory Committee: Jim Simpson, Martin Stute, Steve Chillrud
Honors: Graduated with distinction
- M.S.**, *Yale University* 2001
Department of Chemistry, Division of Physical Chemistry
Advisor: Mark Johnson
- B.A.**, *Wesleyan University* 1997
Department of Chemistry
Thesis: *Microwave spectroscopy of the argon-acetone van der Waals complex*
Advisor: Stewart Novick
Honors: Graduated with high honors

RESEARCH INTERESTS

Research interests include environmental chemistry, groundwater contamination, redox controls on fate and transport of contaminants, and geomicrobiology.

Current research focuses on chemical and microbiological controls on arsenic contamination, primarily in the subsurface environment and at subsurface/surface water interfaces. Causes and controls on arsenic release to groundwaters are considered, as are novel remediation techniques. Methods used include field, laboratory, and computational techniques.

POSITIONS HELD

- 2006—present **Columbia Science Fellow**, Columbia University
- 2006—present **Lecturer**, Columbia University Department of Earth & Environmental Sciences
- 2006 **Instructor**, Summer Term, Boston University Department of Geology
- 2005—2006 **Fulbright Fellow**, Tel Aviv University Department of Microbiology
- 2001—2005 **Research Assistant**, Columbia University Department of Earth & Environmental Sciences
- 2003 **Teaching Assistant**, Columbia University Department of Earth & Environmental Sciences
- 2000—2001 **Teaching Assistant**, Yale University Department of Chemistry
- 1998—2000 **Analytical Chemist**, Research Triangle Institute, Durham, North Carolina

HONORS, AWARDS, AND FELLOWSHIPS

- 2006—present **Columbia Science Fellowship**, Columbia University
- 2005—2006 **Fulbright Fellowship**, US-Israel Educational Foundation
- 2005 **Outstanding Student Paper Award**, American Geophysical Union Hydrology Division
- 2004 **Larson Aquatic Research Support Scholarship**, American Water Works Association
- 2003-2005 **Half-Time Student Support**, Columbia University Center for Environmental Health in Northern Manhattan
- 1997 **Bradley Prize for Excellence in Chemistry**, Wesleyan University Department of Chemistry

PROFESSIONAL SERVICE AND WORKSHOPS ATTENDED

- 2/2006 Participant in *Integrated Water Resource Management in the Middle East*, Kibbutz Keturah, Israel
- 2004—present Reviewer, *Environmental Science & Technology*, *Waste Management*, *Journal of Hazardous Materials*, and *Science of the Total Environment*
- 2004 Research mentor for Research Experience for Undergraduates
- 7/2004 Participant in *Preparing for an Academic Career in the Geosciences*, University of Minnesota
- 2002—2004 Research mentor for the Institute for Research Experience for Teachers
- 2003—2004 Department representative, Graduate Student Government, Columbia University
- 2002—2005 Member, Lamont-Doherty Earth Observatory mentoring award committee
- 2002—2005 Mentor, Graduate student mentoring program, Earth & Environmental Science Department

MEMBERSHIPS

American Chemical Society, Geological Society of America, National Groundwater Association, American Geophysical Union, American Association for the Advancement of Science.

PEER-REVIEWED PUBLICATIONS

Keimowitz, A.R., B. J. Mailloux, P. Cole, M. Stute, H. J. Simpson, S.N. Chillrud. Laboratory investigations of sulfate reduction as a groundwater arsenic remediation strategy. *Environmental Science & Technology*, **submitted 8/2006**.

Parisio, S, **A.R. Keimowitz**, H. J. Simpson, and A. Lent. Arsenic-rich iron floc deposits in seeps downgradient of solid waste landfills (**2006, in press**). *Soils & Sediment Contamination*, **15(5)**.

Keimowitz, A. R., Y. Zheng, S. N. Chillrud, B. J. Mailloux, H. B. Jung, M. Stute and H. J. Simpson. Arsenic redistribution between sediments and water near a highly contaminated source (**2005**). *Environmental Science & Technology* **39**: 8606-8613.

Keimowitz, A. R., H. J. Simpson, M. Stute, S. Datta, S. N. Chillrud, J. Ross and M. Tsang (2005). Naturally-occurring arsenic: mobilization at a landfill in Maine and implications for remediation. *Applied Geochemistry* **20**: 1985-2002.

Keimowitz, A. R., H. J. Simpson, S. N. Chillrud, M. Stute, M. Tsang, S. Datta and J. Ross (2005). Oxidation of groundwater arsenic and iron. In: *Advances in Arsenic Research: Integration of Experimental and Observational Studies and Implications for Mitigation*. ACS Symposium Series, vol. **915**: 206-219. P. A. O'Day, D. Vlassopoulos, D. Meng and L. G. Benning, Eds. American Chemical Society: Washington, DC.

Tyl, R.W., C.B. Myers, M.C. Marr, B.F. Thomas, **A.R. Keimowitz**, D.R. Brine, M.M. Veselica, P.A. Fail, T.Y. Chang, J.C. Seely, R.L. Joiner, J.H. Butala, S.S. Dimond, S.Z. Cagen, R.N. Shiotsuka, G.D. Stropp, J.M. Waechter (2002). Three-generation reproductive toxicity study of dietary bisphenol A in CD Sprague-Dawley rats. *Toxicological Sciences* **68**(1): 121-146.

Kang, L., **A.R. Keimowitz**, M.R. Munrow, S.E. Novick (2002). Rotational spectra of argon acetone: A two-top internally rotating complex. *Journal of Molecular Spectroscopy* **213**(2): 122-129.

Keimowitz, A.R., B.R. Martin, R.K. Razdan, P.J. Crocker, S.W. Mascarella, B.F. Thomas (2000). QSAR analysis of Delta(8)-THC analogues: Relationship of side-chain conformation to cannabinoid receptor affinity and pharmacological potency. *Journal of Medicinal Chemistry* **43**(1): 59-70.

Thomas, B.F., V.L. Parker, L.W. Caddell, L.V. Jones, S.K. Sabharwal, A.I. McDaniel, **A.R. Keimowitz**, N.M. Scheffler, E.D. Hart, J.M. Mitchell, K.H. Davis Jr. (1999). Composition and stability of a standard marijuana cigarette. In: *Marihuana and Medicine*. G.G. Nahas, K.M. Sutin, D. Harvey, and S. Agurell, Eds. Humana Press: Totowa, NJ.

INVITED PRESENTATIONS

Geochemical Controls on Naturally-Occurring Arsenic Mobility, Weizmann Institute of Science Department of Environmental Sciences & Energy Research, April 2, 2006.

Redox Controls and Bioremediation of Arsenic in Groundwater, Tel Aviv University Department of Molecular Microbiology and Biotechnology, December 13, 2005.

Geochemical Controls on Arsenic Mobility at Contaminated Sites, Geological Survey of Israel, November 13, 2005.

Groundwater Contamination, Environmental Policy Masters' Program, School for International and Public Affairs, Columbia University, June 7, 2005.

ABSTRACTS & CONFERENCE PRESENTATIONS

Keimowitz, A.R., M. Stute, H.J. Simpson, S. Chillrud (2006). Effect of hydrogeological heterogeneity on spatial distribution and release of arsenic beneath a landfill. Poster at *Geological Society of America*, Fall meeting, Philadelphia, PA, October 2006.

Wovkulich, K., A. R. Keimowitz, M. Stute, H.J. Simpson, Y. Zheng, Z. Cheng, S. Chillrud. (2006). Arsenic Cycling and Transport Issues at Vineland Chemical Superfund Site. Poster at *Geological Society of America*, Fall meeting, Philadelphia, PA, October 2006.

Wovkulich, K. **A. R. Keimowitz**, M. Stute, H.J. Simpson, Y. Zheng, Z. Cheng, S. Chillrud (2006). Arsenic Cycling and Transport Issues at Vineland Chemical Superfund Site. Poster at *Annual Superfund Basic Research Program Meeting*, New York, NY, January 2006.

Keimowitz, A.R., B.J. Mailloux, P. Cole, H.J. Simpson, M. Stute, S. Chillrud, E. Kujawinski, Y. Zheng (2004). Arsenic Mobility under Sulfate Reducing Conditions. *Eos Transactions AGU* 85(47), Fall Meeting Supplement, Abstract H33H-08.

Keimowitz, A.R., Y. Zheng, S.N. Chillrud, H.B. Jung, Y. He, M. Stute, H.J. Simpson (2004). Arsenic in Pore Waters of a Contaminated Stream and Lake. Poster at *Annual Superfund Basic Research Program Meeting*, Seattle, WA, November 2004.

Keimowitz, A.R., P. Cole, B. Mailloux, H.J. Simpson, M. Stute, S.N. Chillrud, S. Datta, Y. Zheng (2004). Can *in situ* redox manipulations decrease dissolved arsenic in groundwater? *Natural Arsenic in Groundwater Workshop at the 32nd International Geological Congress*, Florence, Italy, August 2004.

Keimowitz, A.R., Y. Zheng, S.N. Chillrud, Y. He, J. Ross, M. Nanes, J. Ross, S. Datta, F. Family, M. Stute, H.J. Simpson (2003). Estimating sources of arsenic to a contaminated stream. Poster at *Annual Superfund Basic Research Program Meeting*, Hanover, NH, October 2003.

Keimowitz, A.R., S. Datta, M. Stute, H.J. Simpson, S.N. Chillrud, M. Tsang, J. Ross. (2003). Arsenic mobilization under reducing conditions beneath a landfill in Maine. *Abstracts of Papers of the American Chemical Society* 226: U584-U584.

Datta, S., **A.R. Keimowitz**, H.J. Simpson, M. Stute, S.N. Chillrud, M. Tsang, Y. Zheng, A. van Geen, G. Dobbs (2002). Redox Controls on Arsenic Mobility Beneath Winthrop Landfill, Maine. Poster at *Arsenic in New England*, Hanover, NH, May 2002.

Woronowicz, E.A., **A.R. Keimowitz**, G.H. Weddle, J.M. Weber, M.A. Johnson (2001). Observation of resonant two-photon photodetachment of water cluster anions via femtosecond photoelectron spectroscopy. *Abstracts of Papers of the American Chemical Society* 222: U210-211.