

Curriculum Vitae

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EDUCATION

Ph.D., Geophysics December 2007
Georgia Institute of Technology, Atlanta, GA

M.S., Geophysics March 2003
Georgia Institute of Technology, Atlanta, GA

Bachelor of Science, Physics March 2000
Georgia Institute of Technology, Atlanta, GA

RESEARCH EXPERIENCE

Postdoctoral researcher 2010-2013
Los Alamos National Lab, Los Alamos, NM
Postdoctoral researcher 2007-2010
University of Chicago, Chicago, IL

TEACHING EXPERIENCE

Assistant Professor of Physics, Monmouth University 2013-present

Courses taught at Monmouth University:

- Instructor, PH 211-212, Introductory Physics with Calculus
- Instructor, PH 301, Modern Physics
- Instructor, PH 302, Theoretical Physics

Courses taught at University of Chicago:

- Instructor, HPS 29608, The Philosophy of Evolution and Intelligent Design 2009
- Co-Instructor, BIOS 13124, Learning about Reasoning from the Evolutionary Debate 2006
- Co-Instructor, BIOS 29000, Critical Thinking in Biology and Life 2005

Courses taught at Georgia Institute of Technology:

- Teaching Assistant, EAS 1601, Habitable Planet 2001,2002

PROFESSIONAL ACTIVITIES

Convener, AGU Fall Meeting December 2011
Session H11C: Equations of State in Subsurface Flow Process Modeling and Simulation

AWARDED GRANTS

Collaborative Research: Numerical Modeling of the Main Endeavour Vent Field, Juan de Fuca Ridge, NSF, 11/1/2008-10/31/2011. Collaborative project with R.P. Lowell, Virginia Polytechnic Institute.

PUBLICATIONS

- Stauffer, P.H., Lewis, K.C., Stein, J.S., Travis, B.J., Lichtner, P., and G. Zyvolski (2014) Joule-Thomson effects on the flow of liquid water, *Transport in Porous Media*, 105(3), 471-485.

- Kelkar, S., K.C. Lewis, S. Karra, G. Zyvoloskia, S. Rapaka, H. Viswanathan, P.K. Mishra, S. Chua, D. Coblenz, R. Pawar (2014) A simulator for modeling coupled thermo-hydro-mechanical processes in subsurface geological media, *International Journal of Rock Mechanics and Mining Sciences*, 70, 569-580.
- Lewis, K.C., Karra, S., and S. Kelkar (2013) A model for tracking fronts of stress induced permeability enhancement, *Transport in Porous Media*, 99(1), 17-35.
- Pavlova, I.P., and K.C. Lewis (2013) An easy and fun way to teach about how science “works”: popularizing Haack’s crossword puzzle analogy, *American Biology Teacher*, 75(6), 397-401.
- Singh, S., R.P. Lowell, and K.C. Lewis (2013) Numerical modeling of phase separation at Main Endeavour Field, Juan de Fuca Ridge, *Geochemistry, Geophysics, Geosystems*, 14, doi: 10.1002/ggge.20249.
- Lewis, K.C. (2013) Forgotten merits of the analytic viewpoint, *EOS*, 94, 71-72.
- Han, L., R.P. Lowell, and K.C. Lewis (2013) The dynamics of two-phase hydrothermal circulation at a surface pressure of 250 bar: Implications for EPR 9°50’N, *Journal of Geophysical Research*, 118, doi:10.1002/jgrb.50158.
- Lewis, K.C., G.A. Zyvoloski, B. Travis, C. Wilson, and J. Rowland (2012) Drainage subsidence associated with Arctic permafrost degradation, *Journal of Geophysical Research*, 117, doi: 10.1029/2011JF002284.
- Lewis, K.C., and R.P. Lowell (2009a) Numerical Modeling of Two-Phase Flow in the NaCl-H₂O System I: Introduction of a Numerical Method and Benchmarking, *Journal of Geophysical Research*, 114, B05202, doi:10.1029/2008JB006029.
- Lewis, K.C., and R.P. Lowell (2009b) Numerical Modeling of Two-Phase Flow in the NaCl-H₂O System II: Applications, *Journal of Geophysical Research*, 114, B08204, doi:10.1029/2008JB006030.
- Lowell, R.P., B.W. Crowell, K.C. Lewis, and L. Liu (2008) Modeling multiphase, multi component processes at oceanic spreading centers: Magma to microbe, in *Modeling Hydrothermal Processes at Oceanic Spreading Centers: Magma to Microbe*, Geophysical Monograph Series, 178, ed. by R.P. Lowell, J.S. Seewald, M.R. Perfit, and A. Metaxas, p. 15, American Geophysical Union, Washington, DC.
- Lewis, K. C. and R. P. Lowell (2004) Mathematical modeling of phase separation of seawater near an igneous dike, *Geofluids*, 4, 197-209.

PRESENTATIONS

- Pavlova, I.V., and K.C. Lewis (2014) Bayes’ equation: From preventing panic in a doctor’s office to helping you think about scientific issues in your everyday life, *STEM Speaker Series*, Brookdale Community College.
- Pavlova, I.V., and K.C. Lewis (2014) Explaining explanations: A model with rigorous yet flexible criteria for your classroom, *Cener for Excellence in Teaching and Learning*, Monmouth University.
- Lewis, K.C., S. Karra, and S. Kelkar (2012) A method for tracking subsurface fronts of stress-induced permeability enhancement, *Eos Trans., AGU*, (Fall Meeting Suppl.), Oral Presentation, H13L-02.
- Singh, S., R.P. Lowell, and K.C. Lewis (2012) Numerical modeling of two-phase flow at the Main Endeavour Field, Juan de Fuca Ridge: quasi-steady state and thermal decline of the vent field, *Eos Trans., AGU*, (Fall Meeting Suppl.), Abstract, OS51B-1871.
- Rapaka, S., K.C. Lewis; G.A. Zyvoloski; C.J. Wilson, and B.J. Travis (2011) Soil subsidence associated with Arctic permafrost degradation, *Eos. Trans., AGU*, (Fall Meeting Suppl.), Abstract, U33A-0029.
- Kelkar, S., K.C. Lewis, G.A. Zyvoloski, S. Rapaka, and R.J. Pawar (2011) Comparison of sequentially coupled and fully implicitly coupled numerical models of Thermal-Hydrological-Mechanical processes in Enhanced Geothermal Reservoirs, *Eos. Trans., AGU*, (Fall Meeting Suppl.), Abstract, H21E-1164.
- Han, L., R.P. Lowell, and K.C. Lewis (2010) Modeling two-phase flow at the East Pacific Rise 9°50’N, Goldschmidt Conference, Knoxville, TN, *Geochim et Cosmochim Acta*, 74(11, Suppl. 1), A376.
- Han, L., R.P. Lowell and K.C. Lewis (2009) Numerical modeling of two-phase flow in seafloor hydrothermal systems, *Eos Trans. AGU*, 90(52), Fall Meet. Suppl., Abstract OS13A-1184
- Lewis, K.C. (2008) Introduction and application of the code FISHES to numerical modeling of two-phase flow in seafloor hydrothermal systems, *Eos Trans., AGU*, (Fall Meeting Suppl.), Invited Abstract, V51B-2024.
- Lewis, K.C., B. Buffett, and T. Becker (2008) A Global Model of Mantle Convection that Incorporates Plate Bending Forces, Slab Pull, and Seismic Constraints on the Plate Stress, *Eos Trans., AGU*, (Fall Meeting Suppl.), Oral Presentation, DI52A-04.

- Lewis, K.C., R.P. Lowell, and W. Xu (2006) FISHERS - a numerical code for modeling NaCl-H₂O hydrothermal systems with applications to mid-ocean ridges, Ridge Theoretical Institute, Mammoth Lakes, CA June 25-30.
- Lewis, K.C. and R.P. Lowell (2004) Numerical Simulations of 1-D Two-Phase Flow with Non-Zero Mass Fluxes: Application to Phase Separation at 9°N (EPR) and the Main Endeavour Vent Field (JDF), Eos Trans, (Fall Meeting Suppl.), Abstract, B04B-10844.
- Lewis, K. and R.P. Lowell (2003) Disequilibrium two-phase flow? The case at A vent EPR 9°N, April, 1991 and at Endeavour, JDF, June, 1999, Eos Trans. AGU, 84(46), (Fall Meeting Suppl.), Abstract, B12A-0768.
- Lewis, K.C. and R. P. Lowell (2001) A simplified approach to modeling two-phase flow of seawater near a dike, AGU, Eos, 82, (Fall Meeting Suppl.), F649.