KEVIN J. MILLER, Ph.D.

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EDUCATION

Ph.D., Geology (focus geophysics) — University of Maryland, College Park, MD, 20742
August 2010 – July 2015 (graduated)

Dissertation Title: ***Transport properties and melt distribution of partially molten mantle rocks: insights from micro-computed tomography and virtual rock physics simulations***

B.S., Physics; Minor, Geophysics — University of Maryland, College Park, MD, 20742
September 2006 - May 2010

RESEARCH AND TEACHING EXPERIENCE

Postdoctoral Research Scholar — Stanford University, Department of Geophysics
(Awarded for September 2015 - Present)

Graduate Research Assistant — University of Maryland, Department of Geology
(August 2010 - present)

Graduate Teaching Assistant — University of Maryland, Department of Geology
(August 2012 - May 2013)

Undergraduate Research Assistant — University of Maryland, Department of Geology
(June 2009 - August 2010)

Undergraduate Research Assistant — University of Maryland, Department of Physics
(June 2007 - August 2008)

PUBLICATIONS

Primary author publications:

Miller, K. J., Vanorio, T., Keehm, Y. (2017) Evolution of permeability and microstructure of tight carbonates due to numerical simulation of calcite dissolution. [Special Issue: Rock Physics of the Upper Crust] *Journal of Geophysical Research*, (accepted).

Miller, K. J., Zhu, W., Montési, L. G. J., Gaetani, G. A., Le Roux, V., and Xiao, X. Experimental evidence for melt partitioning between olivine and orthopyroxene in partially molten harzburgite. *Journal of Geophysical Research: Solid Earth*, 121, 5776-5793.

Miller, K. J., Montési, L. G. J., and Zhu, W. Estimates of olivine-basalt electrical conductivity using a digital rock physics approach. *Earth and Planetary Science Letters*, 432, 332-341.

Miller, K. J., Zhu, W., Montési, L. G. J., and Gaetani, G. A. (2014). Experimental quantification of permeability of partially molten mantle rock. *Earth and Planetary Science Letters*, 388, 273-282. Rated by Scopus® as 95th percentile most cited paper of similar age and content.

Co-authored publications:

Skemer, P., Chaney, M., Emmerich, A. L., **Miller, K. J.**, Zhu, W. (2017) Network topology of olivine – basalt partial melts. Geophysical Journal International (accepted).

Berg, M. T. L., Bromiley, G. D., Butler, I. B., Frost M., Bradley, R., Carr, J. Le Godec, Y., Montési, L. G. J., Zhu, W., **Miller, K. J.**, Perrillat, J., Elisabetta, M., Tatham, D., Redfern, S. A. T. (2017) Deformation-aided segregation of Fe-S liquid from olivine under deep Earth conditions: Implications for core formation in the early solar system. *Phy. Earth Planet. Inter.* 263, 38-54.

AWARDS

National Research Council Postdoctoral Fellowship (declined). National Research Council and National Institute of Standards and Technology. April 2015.

Outstanding Student Paper Award in Mineral and Rock Physics. American Geophysical Union Fall Meeting. December 2014.

Best Student Publication Award. Department of Geology, University of Maryland. December 2014.
Best presentation by a graduate student PhD candidate. Department of Geology Graduate Student Talk Day, University of Maryland. December 2014.
Earth System Science Interdisciplinary Center Travel Award. College of Computer, Mathematical, and Natural Sciences, University of Maryland. September 2014.
Anne Wylie Dissertation Fellowship. College of Computer, Mathematical, and Natural Sciences, University of Maryland. April 2014.
American Federation of Mineralogical Societies Scholarship. September 2012.
Best presentation by a graduate student PhD pre-candidate. Department of Geology Graduate Student Talk Day, University of Maryland. December 2012.

PROFESSIONAL MEMBERSHIPS

Member of American Association of Petroleum Geologists. (November 2014 - present).
Guest student researcher at Woods Hole Oceanographic Institution, Woods Hole, MA. (June 2011 - present).
Guest researcher at Center for Neutron Research, National Institute of Standards and Technology, Gaithersburg, MD. (February 2014 - present).
Beamline user at 2BM Advance Photon Source, Argonne, IL. (August 2011 - present).
Member of American Geophysical Union. (August 2009 - present).

CONFERENCE AND INVITED PRESENTATIONS

Miller, K.J., Vanorio, T., Keehm, Y. (February 2017), Evolution of permeability and microstructure of tight carbonates due to numerical simulation of calcite dissolution. Stanford Center for Carbon Sequestration Weekly Seminar. Stanford, CA. Oral presentation.

Miller, K.J., Vanorio, T., Keehm, Y. (December 2016), Evolution of permeability and microstructure of tight carbonates due to numerical simulation of calcite dissolution. American Geophysical Union Fall Meeting, San Francisco, CA. Poster presentation.

Miller, K.J., Vanorio, T., Keehm, Y. (July 2016), Evolution of porosity-permeability trends due to experiments-driven simulation of calcite dissolution in tight carbonate rocks. SEG-AGU Upper Crust Physics of Rocks, Hilo, HI. Poster presentation.

Miller, K. J., Zhu, W., Montési, L. G. J., Gaetani, G. A., Le Roux, V., and Xiao, X. (December 2015). Lithologic melt partitioning and transport properties of partially molten harzburgite. American Geophysical Union Fall Meeting, San Francisco, CA. Oral presentation.

Miller, K. J. (February 2015). *Invited***.** Transport properties of partially molten mantle rocks: results from digital rock physics. Department of Geophysics Colloquium, Stanford University, Palo Alto, CA. Oral presentation.

Miller, K. J., Montési, L. G. J., and Zhu, W. (December 2014). Electrical conductivity and permeability of partially molten mantle rocks: results from digital rock physics experiments. American Geophysical Union Fall Meeting, San Francisco, CA. Poster presentation.

Miller, K. J., Zhu, W., Montési, L. G. J., Gaetani, G. A., Xiao, X., and Le Roux, V. (August 2014). Experimental evidence for melt partitioning between olivine and orthopyroxene in partially molten harzburgite. Gordon Research Conference on Rock Deformation, Andover, NH. Poster presentation.

Miller, K. J., Zhu, W., Montési, L. G. J., Gaetani, G. A., Xiao, X., and Le Roux, V. (December 2013). Experimental evidence for melt partitioning between olivine and orthopyroxene in partially molten harzburgite. American Geophysical Union Fall Meeting, San Francisco, CA. Oral presentation.

Miller, K. J., Zhu, W., Montési, L. G. J., and Gaetani, G. A. (December 2012). Permeability and three-dimensional melt distribution of partially molten mantle rocks. American Geophysical Union Fall Meeting, San Francisco, CA. Poster presentation.

Miller, K. J., Zhu, W., Montési, L. G. J. and Gaetani, G. A. (August 2012). Permeability and three-dimensional melt distribution of partially molten mantle rocks. Gordon Research Conference on Rock Deformation, Andover, NH. Poster presentation.

Miller, K. J. and Montési, L. G. J. (August 2011). A phenomenological approach to simulating LPO development of various olivine fabrics. The 12th International Workshop on Modeling of Mantle Convection and Lithospheric Dynamics, Groß Dölln, Germany. Poster presentation.

Miller, K. J. and Montési, G. J. (August 2010). An empirical approach to simulating the development of various olivine fabrics. Gordon Research Conference on Rock Deformation, Tilton, NH. Poster presentation.

Miller, K. J. and Montési, G. J. (December 2009). An empirical approach to simulating the development of various olivine fabric and associated seismic anisotropy in complex geodynamic flow models. American Geophysical Union Fall Meeting, San Francisco, CA. Poster presentation.

UNIVERSITY SERVICE

Referee for Journal of Structural Geology and Journal of Geophysical Research: Solid Earth.

Co-led a crowd-funding campaign on Launch UMD collecting funds to purchase a 3-D printer for the Department of Geology at the University of Maryland. (October 2014).

Chair of Geodynamics Reading Group. September 2012 - May 2013.

Volunteer assistant for scientific presentations at Maryland Day. April 2011, 2012, 2013, & 2014.

Coordinator for the Geodynamics Reading Group. September 2012 - May 2013.