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Roger L. Nielsen

[Curriculum Vitae](#)



Year hired: 1988

Specialty: Igneous Petrology, analytical geochemistry, trace element modeling, phase equilibria, electron microprobe analysis

Research interests: Computer modeling of the crystallization of magma within volcanoes; the measurement of trace metals in the crystals and liquids formed during experimental melting and crystallization of volcanic rocks; the study of natural inclusions of magma within crystals. [Igneous Research Group](#)

Recent Publications: Kohut, E.J., Kent, A.J., Stern, R.J., Nielsen, R.L., Bloomer, S.H., (submitted) Data Brief: Along-Arc variations in melt compositions in the southern Mariana arc. (*G-cubed*).

Rowe, M.C., Nielsen, R.L., A.J.R. Kent, (in revision) Across Arc Variation in Basaltic f02: Influence of a Subduction Component in the Cascadia Subduction Zone (*Journal of Petrology*).

Rowe, M.C., A.J.R. Kent, R.L. Nielsen, 2007, Determination of sulfur speciation and oxidation of olivine hosted melt inclusions, *Chemical Geology*, 236, 303-322.

Kohut, E.J., Stern, R. J., Kent, A.J.R., Nielsen, R.L., Bloomer, S.H., and Leybourne, M, 2006, Evidence for adiabatic decompression melting in the Southern Mariana Arc from high-Mg lavas and melt inclusions, *Contrib. Mineral. Petrol.*, 152, #2, 201-221

Rowe, M.C., Nielsen, R.L., and Kent, A.J., 2006, Anomalous Fe contents in rehomogenized olivine hosted melt inclusions from oxidized magmas, *American Mineralogist*, v. 91, #1, 82-95.

Kohut, E.J., Stern, R.J., Kent, A.J.R., Nielsen, R.L., Bloomer, S.H., and Leybourne, M., The Origins of High-Mg Lavas in the Mariana Arc: Evidence from Olivine-Hosted Melt Inclusions (*Jour. of Petrol.*).

Rowe, M. C., Nielsen, R.L., and Kent., A. J. , Anomalous Fe contents in rehomogenized olivine hosted melt inclusions from oxidized magmas (*American Mineralogist*)

Kohut, E.J. and Nielsen, R.L., 2004, [Melt inclusion formation mechanisms and compositional effects in high-An feldspar and high-Fo olivine in anhydrous mafic silicate liquids](#). *Contrib. Mineral. Petrol.*, 147, 684-704

Kohut, E.J. and Nielsen, R.L., 2003, [Low pressure phase equilibria of anhydrous anorthite bearing mafic magmas G-cubed](#),

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Zimmerman, C.E. and Nielsen, R.L., 2003, [Effect of Analytical conditions on the measurement of Strontium/Calcium ratios in otoliths of anadromous salmonids using wavelength dispersive electron microprobe analysis](#). Fisheries Bulletin, 101, 712-718

Michael, P.J., McDonough, W.F., Nielsen, R.L., Cornell, W.C., 2002, [Depleted Melt Inclusions in Plagioclase: Messages from the Mantle or Mirages from the Magma Chamber?](#) Chem. Geol., 183, 43-61.

Sours-Page, R., Nielsen, R.L. and Batiza, R., 2002, [Parental magma diversity on a fast-spreading ridge: Evidence from olivine and plagioclase-hosted melt inclusions in axial and seamount lavas from the northern East Pacific Rise](#) Chem. Geol., 183, 237-262.

Norman, M., Garcia, M., Kamenetsky, D. and Nielsen, R.L., (2002) [Melt inclusions in Hawaiian picrites: Melting and source compositions](#) Chem. Geol., 183, 143-168.

Hilyard, MD, Nielsen, RL, Beard, JS, Patino-Duce, A, Blencoe, J., 2000, Partitioning of REE and HFSE between pargasitic amphibole and natural silicate melt, Geochim. Cosmochim. Acta, 64, 1103-1120.

Nielsen, RL and Beard, JS, 2000, Magnetite-melt HFSE partitioning, Chem. Geology, 164, 21-34

Nielsen, R.L, Sours-Page, R.E., and Harpp, K., 2000, [The role of a Cl-bearing flux in the origin of depleted ocean floor magmas](#), G-cubed, 1, paper 1999GC000017.

Sours-Page, RE, Johnson, KTM, Nielsen, RL and Karsten, J., 1999, The petrogenesis of the diversity of parent magmas in the Endeavour Segment of the Juan de Fuca Ridge. Contrib. Mineral. Petrol. 134, 342-363.

Nielsen, RL, Michael, P. and Sours-Page, RE, 1998, Physical and chemical indicators of compromised melt inclusions. Geochim. Cosmochim. Acta, 61, 161-172

Nielsen, R.L., Crum, J., Bougouis, R., Forsythe, L.M., Fisk, M.R. and Christie, D.R., 1995, Melt Inclusions in High-An Plagioclase From the Gorda Ridge: An Example of the Local Diversity of MORB Parent Magmas. Contrib. Mineral. Petrol. 122, 34-50.

Recent Graduate Student Titles: Rowe, Michael C., PhD, 2006, The role of subduction fluids in generating compositionally diverse basalts in the Cascadia Subduction Zone.

Kohut, Edward J. Ph.D, 2004, Olivine and plagioclase hosted melt inclusions and their application to determining parental arc magmas.

Sours-Page, Rachel E., PhD, 2000, Magmatic Processes at Mid-Ocean Ridges: Evidence from Lavas and Melt Inclusions from the Southeast Indian Ridge, the Endeavour Segment of the Juan de Fuca Ridge, and the Northern East Pacific Rise.

Hilyard, Mark D., M.S., 1997, Partitioning of Rare Earth and High Field Strength Elements Between Pargasitic Amphibole and Silicate Melts.

Forsythe, Lance M., PhD, 1994, Trace Element Distributions in
Igneous Minerals and Liquids.

Courses taught: GEO 315 Earth Materials II
GEO 412/512 Igneous Petrology
GEO/OC 508 Workshop on Microanalysis
GEO/OC 528 Microprobe Analysis
OC 668 Theoretical Petrology
GEO/OC 688 Trace Element Petrology
Plus many other topical graduate seminars and reading and
conference.

Degrees: PhD in Geology, Southern Methodist University, 1983
M.S. in Geology, University of Arizona, 1978
B.S. in Geology, University of Arizona, 1976

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