

**Curriculum vita: John A. Wolff**  
**Professor, School of the Environment, Washington State University**

**Biographical**

**Employment:** Assistant Professor, University of Texas at Arlington, 1983 - 1989.  
Associate Professor, University of Texas at Arlington, 1989-1997.  
Visiting Scientist, Los Alamos National Laboratory, 1992-1993.  
Associate Professor, Washington State University, 1997-2002.  
Professor, Washington State University, 2002 onwards.  
Visiting Scientist, Institute of Earth Sciences “Jaume Almera”, CSIC, Barcelona, Spain, 2003.  
Visiting Scientist, University of Durham (U.K.) and New Mexico State University, 2011.  
Visiting scientist, New Mexico State University and ETH Zürich (Switzerland), 2017.

**Degrees:** B.Sc. Honours, University of Leeds, 1976  
Ph.D., University of London (Imperial College), 1983

**Honors:** Fellow of the Geological Society of America, elected 2014.

**Teaching**

***Undergraduate courses regularly taught:***

Geol 103: Other Worlds: Comparative Planetology of our Solar System

Geol 356: Igneous and Metamorphic Petrology

Geol 467: Volcanology

Geol 303: Environmental Geology (participation)

Additional courses formerly or occasionally taught: Introduction to Physical Geology; Mineralogy; Optical Mineralogy; Advanced Igneous and Metamorphic Petrology; Summer Field Course; Quantitative Concepts in Geology (participation); Senior Thesis; Geol 498 Seminar.

***Graduate courses regularly taught:***

Geol 560: Advanced Igneous Petrology

Geol 567: Volcanology

Additional courses formerly or occasionally taught: Advanced Physical Volcanology; Trace Element and Isotope Geochemistry; Igneous Petrogenesis; Special Topics in Petrology and Volcanology.

**Teaching evaluations:** Average 4+ on a 0-5 scale. In the past 2 years, scores have been 4.4 or better.

**Graduate advisees:** 24 M.S. and 6 Ph.D. students, graduated 1986-2010. Service on approximately 30 other M.S. and Ph.D. committees. Currently 4 Ph.D. advisees and 3 M.S. advisees.

**Other:** University of Texas at Arlington semester abroad program, London, 1986

**Awards:** UTA Science Teacher of the Year Award, 1988 and 1997; WSU Honors College Outstanding Thesis Advisor Award, 2013

### **Administrative and other university service (University of Texas at Arlington)**

#### ***Departmental***

Chair, Scholarship Committee, 1988-89  
Chair, Graduate Studies Committee, 1989-90  
Chair, Research Enhancement Committee, 1989-90  
Field camp coordinator, 1990-92  
Undergraduate Studies Committee, 1994-97  
Graduate Studies Committee, 1995-96  
Undergraduate Advisor, 1996-97  
Chair, Geology Field Camp Review Committee, 1996

#### ***College & University***

College of Science Research Enhancement Committee, 1989-90  
College of Science Research Committee, 1995-97  
Commencement Marshal, 1993, 1995-97.  
College of Science Electron Microscopy Review Committee, 1996

### **Administrative and other university service (Washington State University)**

#### ***Departmental***

*Explanation: In 2006, The Department of Geology merged with the program in Environmental Sciences and Regional Planning to form the School of Earth and Environmental Sciences. This unit subsequently merged with the Department of Natural Resource Sciences to form the School of the Environment in 2012.*

#### Department of Geology, 1997 - 2006:

Director of the GeoAnalytical Laboratory, 1999-2006  
Chair, Geochemistry and Geochronology Search Committee, 1998-99  
Chair, Isotope Geochemistry Search Committee, 2001-2002  
Geology Graduate Coordinator 2003 - 2006  
Acting Department Chair, Spring 2006

#### School of Earth and Environmental Sciences, 2006-2011

Director of the GeoAnalytical Laboratory, 2006-2011  
Space Committee, 2006

Environmental Geophysicist Search Committee, 2007  
School of Earth and Environmental Sciences – Natural Resource Sciences Curriculum  
Committee, 2009-2010 (Chair in Fall 2009)  
Coordinator of Geology programs, 2008-2009  
Chair, Microprobe Laboratory Manager Search Committee, 2009-2010  
Associate Director, 2009-2011  
Acting Director, Spring 2010

School of the Environment, 2012 onwards

Associate Director for Research and Graduate Studies, 2012 - 2014  
Director of the GeoAnalytical Laboratory, 2012 onwards  
Chair, Graduate Studies Committee, 2012 - 2014  
Chair, Microprobe Laboratory Manager Search Committee, 2013

***College and University***

College of Science Dean's Advisory Council, 1999 – 2002  
College of Science Development Director Search Committee, 2001  
Science and Engineering Seed Grant review panel, 2006, 2007  
College of Science Instructional Equipment Committee, 2008  
College of Science Sci 101/102 Committee, 2008-09  
Science & Engineering undergraduate poster competition judge, 2007-2012  
College of Science ad-hoc committee on reorganization, 2010  
College of Science Vision committee, 2010  
Science and Engineering Space Grant review committee, 2011, 2012  
College of Arts and Sciences Graduate Advisory Committee 2012-2014

***National***

NSF GeoPRISMS panel, 2014-2015

**General professional activities**

***Member of:***

American Geophysical Union  
Geological Society of America

***Editorial and review work:***

*Geological Magazine* Editorial Advisory Board, 1988 - 2001.

*Geology* Editorial Board, 2006 - 08

Manuscripts regularly reviewed for all top-ranked petrological, volcanological and  
general geological journals; occasionally for *Science* and *Nature*.

Proposals regularly reviewed for NSF (average 5 - 6 per year outside of panel service);  
occasionally for NSF-equivalents in the UK, New Zealand, Switzerland, and  
European Union; few/year for private foundations (e.g. Murdock Charitable Trust)

***Other:***

Co-convenor, AGU Chapman Conference on Shallow Level Processes in Ocean Island  
Magmatism, Tenerife, Canary Islands, November 1996.

Co-editor, Journal of Volcanology and Geothermal Research Special Issue on the Geology and Geophysics of Tenerife, 2000.  
 Symposium chair, "Geochemical evolution of silicic magma systems", V.M. Goldschmidt Conference, Moscow, ID, 2005.  
 Co-convenor, GSA Penrose conference on Low-delta<sup>18</sup>O Rhyolites, ID and WY, Sept. 2009  
 Co-convenor, 6<sup>th</sup> Columbia River basalt symposium, GSA National meeting, Oct. 2009  
 Co-editor, GSA Special Paper 497, published September 2013.  
 Carbon Tech Alliance advisory board member, 2010-2013.  
 Convenor, Symposium on Cenozoic magmatism in the inland NW USA, GSA Rocky Mtn. section, Moscow, ID, 2016.  
 Field trip committee, IAVCEI 2017 meeting, Portland, OR.  
 Co-leader, Rio Grande volcanism rift field trip, IAVCEI 2017 meeting, Portland, OR.  
 Co-leader, inland NW transect field trip, IAVCEI 2017 meeting, Portland, OR.

## Research

### ***Principal research interests:***

Super-eruptions and their outcomes: flood basalts and caldera-forming ignimbrites  
 Causes and consequences of chemical and isotopic variations in volcanic rocks  
 High-temperature rhyolites

### ***Research grants and contracts awarded as sole or lead PI:***

Faculty participation grants tenured at Los Alamos National Laboratory (1984-1985, 1991)	
<i>Associated Western Universities and Department of Energy</i>	\$10,700
Quantification of explosive volcanic products in the Cape Verde Islands, Eastern Atlantic Ocean (1985).	
<i>UTA Organised Research Fund</i>	\$4,950
Large scale continental magmatism, Bandelier Tuffs, New Mexico (1986).	
<i>UTA Organised Research Fund</i>	\$2,989
Experimental welding of volcanic ash (1988).	
<i>UTA Research Enhancement Program</i>	\$3,985
Carbonatite genesis: the example of the oceanic nephelinite-phonolite-carbonatite volcanic suite on Brava, Cape Verde Islands (1989-1991)	
<i>National Science Foundation</i>	\$55,400
Origin of Earth's continents: relative abundances of the trace elements niobium and tantalum (1990).	
<i>UTA Research Enhancement Program</i>	\$4,945
Anisotropy of magnetic susceptibility of welded ignimbrites (1991-1993).	
<i>National Science Foundation</i>	\$40,900
Faculty Sabbatical Fellowship at Los Alamos National Laboratory (1992-1993).	
<i>Associated Western Universities and Department of Energy</i>	\$18,000
Geological consultant for the Environmental Restoration Program (1994).	

<i>Los Alamos National Laboratory</i>	\$7,570
<sup>87</sup> Sr/ <sup>86</sup> Sr as an isotopic ratemeter for dynamic processes in high-Rb/Sr zoned magma bodies: application to the Bandelier Tuff (1994-1997)	
<i>National Science Foundation</i>	\$110,000
Collapse of the Valles caldera: an integrated lithic and pumice compositional study of the Bandelier Tuff (2000-2003, collaborative research with S.Self, University of Hawaii)	
<i>National Science Foundation</i>	\$222,561
Interaction between magma and hydrothermally altered crust on a mature oceanic island: an isotopic and trace-element study of the Diego Hernandez Formation, Las Cañadas caldera, Tenerife, Canary Islands (2000-2002)	
<i>National Science Foundation</i>	\$183,839
Acquisition of a laser-ablation, inductively-coupled plasma source, multicollector mass spectrometer (LA-ICP-MCMS) for isotope and trace element microanalysis of geological samples (2000-2002)	
<i>M.J. Murdock Charitable Trust</i>	\$475,000
Acquisition of a laser-ablation, inductively-coupled plasma source, multicollector mass spectrometer (LA-ICP-MCMS) for isotope and trace element microanalysis of geological samples (2000-2002)	
<i>National Science Foundation</i>	\$476,135
Assessing crustal assimilation in the petrogenesis of Columbia River basalt: plagioclase <sup>87</sup> Sr/ <sup>86</sup> Sr stratigraphy (2002-2003)	
<i>National Science Foundation</i>	\$85,354
Acquisition of an X-ray fluorescence spectrometer (2002 – 2004)	
<i>National Science Foundation</i>	\$176,135
Flood basalt magma genesis and dynamics: application of crystal isotope stratigraphy and igneous componentry to the Columbia River Basalt Group (2005 - 2008, collaborative research with F.C. Ramos, UC Santa Cruz)	
<i>National Science Foundation</i>	\$182,888
Storage duration of Giant Plagioclase Basalts, Deccan Traps, India (2006-2007, co-P.I. G. Hart, collaborative research with G. Sen, Florida International University)	
<i>National Science Foundation</i>	\$22,020
Origin of very voluminous, strongly <sup>18</sup> O-depleted, high-temperature rhyolites of the Snake River Plain (2006-2009)	
<i>National Science Foundation</i>	\$199,992
Caldera collapse and subsequent evolution of long-lived silicic supervolcanoes: a case study of the Tshirege Member, Bandelier Tuff, NM (2009 – 2011, co-P.I. Hart, collaborative with F.C. Ramos, New Mexico State University)	
<i>National Science Foundation</i>	\$188,467

Acquisition of an inductively coupled plasma mass spectrometer (2009 - 2010) <i>National Science Foundation</i>	\$130,828
Super-eruptions, eruptive centers and time-volume behavior of a continental hotspot: the central snake River Plain (2009-2012) <i>National Science Foundation</i>	\$210,592
Geologic mapping and physical volcanology of the Calavera Canyon 7.5" USGS quadrangle, McDermitt caldera complex, northern Nevada, USA (2009-2010) <i>U.S. Geological Survey EDMAP program</i>	\$14,248
Geochemical analysis of borehole cuttings at Yellowstone National Park (2010-2012) <i>Yellowstone Natl Prk</i>	\$10,575
Generation of large geochemical data sets for single units of volcanic rock: application of portable XRF spectrometry to zoned ignimbrites (2012-2014). <i>National Science Foundation</i>	\$216,850
Heart of Glass: Volatile release and petrogenesis of Columbia River flood basalt lavas through study of melt inclusions and glassy tephra (2014-2016). <i>National Science Foundation</i>	\$213,904
Acquisition of an X-ray fluorescence spectrometer (2016-2017). <i>National Science Foundation</i>	\$222,102
<b><i>Research grants and contracts awarded as co-PI:</i></b>	
Isotopic and trace element characteristics of rhyolites from the Valles Caldera, New Mexico: post-eruptive alteration, petrogenesis, and applications to hydrothermal alteration and emplacement mechanisms (1987 - 1989, PI S. Self). <i>US Department of Energy</i>	\$80,000
Acquisition of a laser fluorination vacuum line for oxygen isotope ratio measurement (2000-2002, PI P.B. Larson) <i>National Science Foundation</i>	\$30,000
Technician Support (Phase I) for MC-ICP-MS isotope facility at Washington State University (2005 - 2007, PI J.D. Vervoort) <i>National Science Foundation</i>	\$225,000
Acquisition of an electron probe microanalyzer (2006-2007, PI F.F. Foit) <i>National Science Foundation</i>	\$630,000
Technician support (years 4 and 5) for radiogenic isotope and geochronology facility, Washington State University (2008 - 2009, PI J.D. Vervoort) <i>National Science Foundation</i>	\$90,000
Purchase and calibrate X-ray fluorescence spectrometer for the GeoAnalytical Lab (2011-2013, PI R.M. Conrey)	

<i>U.S. Geological Survey</i>	\$50,000
Geologic Mapping of the Pogue Point 7.5' Quadrangle, Northeastern Oregon (2012-2013, PI D. Gaylord)	
<i>U.S. Geological Survey EDMAP program</i>	\$16,796
MRI: Acquisition of a laser-ablation, multi-collector ICP-MS for research and training in Earth, Environmental, and Anthropological Sciences (2016-2017, PI J.D. Vervoort)	
<i>National Science Foundation</i>	\$596,778

***Research papers in refereed journals***

**Total citations = 3445; h-index = 37**

\*published with one or more student co-authors

\*\*student first author

**1980 \*\*Wolff, J.A.** Peridotite xenoliths in basalts and mantle dynamics (discussion). *Nature* 288, 103.

**1981 \*\*Wolff, J.A. & Wright, J.V.** (1981) Rheomorphism of welded tuffs. *J. Volcanol. Geotherm. Res.* 10, 13-34.

**\*\*Wolff, J.A. & Wright, J.V.** (1981) Formation of the Green Tuff, Pantelleria. *Bull. Volcanol.* 44, 681-690.

**1983 \*\*Wolff, J.A. & Storey, M.** (1983) The volatile component of some pumice-forming alkaline magmas from the Azores and Canary Islands. *Contrib. Mineral. Petrol.* 82, 66-74.

**1984 Wolff, J.A.** (1984) Variation in Nb/Ta during differentiation of phonolitic magma, Tenerife, Canary Islands. *Geochim. Cosmochim. Acta* 48, 1345-1348.

**Wolff, J.A. & Storey, M.** (1984) Zoning in highly alkaline magma bodies. *Geol. Mag.* 121, 563-575.

\*Self, S., Rampino, M.R., Newton, M.S. & **Wolff, J.A.** (1984) Volcanological study of the great Tambora eruption of 1815. *Geology* 12, 659-663.

**1985 Wolff, J.A.** (1985) The effect of explosive eruption processes on geochemical patterns within pyroclastic deposits. *J. Volcanol. Geotherm. Res.* 26, 189-201.

**Wolff, J.A.** (1985) Zonation, mixing and eruption of silica-undersaturated alkaline magma: a case study from Tenerife, Canary Islands. *Geol. Mag.* 122, 623-640.

**1986 Wolff, J.A.** (1986) Welded-tuff dykes, conduit closure, and lava dome growth at the end of explosive eruptions. *J. Volcanol. Geotherm. Res.* 28, 349-354.

Stothers, R.B., **Wolff, J.A.**, Self, S. & Rampino, M.R. (1986) Basaltic fissure eruptions, plume heights, and atmospheric aerosols. *Geophys. Res. Lett.* **13**, 715-728.

**1987** **Wolff, J.A.** (1987) Crystallisation of nepheline syenite in a subvolcanic magma system: Tenerife, Canary Islands. *Lithos* **20**, 207-223.

Self, S. & **Wolff, J.A.** (1987). Comments on "The petrology of Tambora volcano, Indonesia: a model for the 1815 eruption" by J. Foden. *J. Volcanol. Geotherm. Res.* **31**, 163-166.

**1988** \*Self, S., Kircher, D.E. & **Wolff, J.A.** (1988) The El Cajete Series, Valles Caldera, New Mexico. *J. Geophys. Res.* **93**, 6113-6127.

\*Henry, C.D., Price, J.G., Rubin, J.N., Parker, D.F., **Wolff, J.A.**, Self, S., Franklin, R.R., Barker, D.S. (1988) Widespread, lava-like silicic volcanic rocks of Trans-Pecos Texas. *Geology* **16**, 509-512.

**1989** Henry, C.D., Price, J.G., Parker, D.F. & **Wolff, J.A.** (1989). Mid-Tertiary silicic alkalic magmatism of Trans-Pecos Texas: rheomorphic tuffs and extensive silicic lavas. *New Mexico Bureau of Mines and Mineral Resources Mem.* **46**, 231-274.

Palacz, Z.A. & **Wolff, J.A.** (1989) Strontium, neodymium and lead isotopic characteristics of the Granadilla Pumice, Tenerife: a study of the causes of strontium isotope disequilibrium in felsic pyroclastic deposits. In Saunders, A.D. & Norry, M.J. (eds), Magmatism in the Ocean Basins. *Geol. Soc. London Spec. Publ.* **42**, 147-160.

Rampino, M.R., Stothers, R.B., Self, S. & **Wolff, J.A.** (1989) Volcanic winter? Climatic effects of the largest volcanic eruptions. In Latter, J.H. (ed.), Volcanic Hazards. *IAVCEI Proc. in Volcanology* **1**, 3-9.

Storey, M., **Wolff, J.A.**, Norry, M.J. & Marriner, G.F. (1989) Origin of hybrid lavas from Agua de Pau volcano, Sao Miguel, Azores. In Saunders, A.D. & Norry, M.J. (eds), Magmatism in the Ocean Basins. *Geol. Soc. London Spec. Publ.* **42**, 161-180.

\***Wolff, J.A.**, Ellwood, B.B. & Sachs, S.D. (1989) Anisotropy of magnetic susceptibility in welded tuffs: application to a welded-tuff dyke in the Tertiary Trans-Pecos Texas volcanic province, U.S.A. *Bull. Volcanol.* **51**, 299-310.

**Wolff, J.A.** & Palacz, Z.A. (1989) Lead isotope and trace element variation in Tenerife pumices: evidence for recycling within an ocean island volcano. *Mineral. Mag.* **53**, 519-525.

- 1990** De Silva, S., **Wolff, J.A.** & Sharpton, V.L. (1990) Explosive volcanism and associated pressures; implications for models of endogenically shocked quartz. In Sharpton, V.L. and Ward, P.D. (eds), Global catastrophes in Earth history. *Geol. Soc. Amer. Special Paper 247*, 139-145.
- Wolff, J.A.**, Wörner, G. & Blake, S. (1990) Gradients in physical parameters in zoned felsic magma bodies: implications for evolution and eruptive withdrawal. *J. Volcanol. Geotherm. Res.* **43**, 37-55.
- \*Spell, T.L., Harrison, T.M. & **Wolff, J.A.** (1990)  $^{40}\text{Ar}/^{39}\text{Ar}$  dating of the Bandelier Tuffs and San Diego Canyon ignimbrites, Jemez Mountains, New Mexico: temporal constraints on magmatic evolution. *J. Volcanol. Geotherm. Res.* **43**, 175-193.
- 1991** \*Self, S., **Wolff, J.A.**, Skuba, C.E., Morrissey, M.M. and Spell, T.L. (1991) Revisions to the stratigraphy and volcanology of the post-0.45 Ma units and the volcanic section of VC-1 corehole, Valles Caldera, New Mexico. *J. Geophys. Res.* **96**, 4107-4116.
- \*\*Duncker, K.E., **Wolff, J.A.**, Harmon, R.S., Leat, P.T., Dickin, A.P. & Thompson, R.N. (1991) Diverse mantle and crustal components in lavas of the NW Cerros del Rio volcanic field, Rio Grande Rift, New Mexico. *Contrib. Mineral. Petrol.* **108**, 331-345.
- 1992** Henry, C.D. & **Wolff, J.A.** (1992) Distinguishing strongly rheomorphic tuffs from extensive silicic lavas. *Bull. Volcanol.* **54**, 171-186.
- 1993** **Wolff, J.A.** and Toney, J.B. (1993) Trapped liquid from a nepheline syenite: a re-evaluation of Na-, Zr-, F-rich interstitial glass in a xenolith from Tenerife, Canary Islands. *Lithos* **29**, 285-293.
- Ellwood, B.B., MacDonald, W.D. and **Wolff, J.A.** (1993) The slot technique for rock magnetic sampling. *Phys. Earth Plan. Int.* **78**, 51-56.
- 1994** **Wolff, J.A.** (1994) Physical properties of carbonatite magmas inferred from molten salt data, and application to extraction patterns from carbonatite-silicate magma chambers. *Geol. Mag.* **131**, 145-153.
- \***Wolff, J.A.** & Turbeville, B.N. (1994) Comments on "A reappraisal of ignimbrite emplacement: progressive aggradation and particulate to non-particulate flow transitions during emplacement of high-grade ignimbrite" by M.J. Branney and P. Kokelaar. *Bull. Volcanol.* **56**, 134-137.
- 1995** DeSilva, S.L. & **Wolff, J.A.** (1995) Zoned magma chambers: the influence of magma chamber geometry on sidewall convective fractionation. *J. Volcanol. Geotherm. Res.* **65**, 111-118.

- Wolff, J.A.** & Gardner, J.N. (1995) Is the Valles Caldera entering a new cycle of activity? *Geology* 23, 411-414.
- 1996** Stimac, J., Hickmott, D., Abell, R., Larocque, A.C.L., Broxton, D., Gardner, J.N., Chipera, S., **Wolff, J.A.** & Gauerke, E. (1996) Redistribution of Pb and other volatile trace metals during eruption, devitrification, and vapor-phase crystallization of the Bandelier Tuff, New Mexico. *J. Volcanol. Geotherm. Res.* 73, 245-266.
- Wolff, J.A.**, Gardner, J.N. & Reneau, S.L. (1996) Field characteristics of the El Cajete pumice deposit and associated southwestern moat rhyolites of the Valles caldera. *New Mexico Geol. Soc. Guidebook.* 47, 311-316.
- \*\*Ellisor, R., **Wolff, J.A.** & Gardner, J.N. (1996) Outline of the petrogenesis of the Keres Group, Jemez Mountains, New Mexico. *New Mexico Geol. Soc. Guidebook.* 47, 237-242.
- 1999** \***Wolff, J.A.**, Ramos, F.C. & Davidson, J.P. (1999) Sr isotope disequilibrium in the Bandelier Tuff, Valles Caldera, New Mexico: constraints on the crystallization of a large rhyolitic magma chamber. *Geology* 27, 495-498
- 2000** **Wolff, J.A.** & Sumner, J.M. (2000) Lava fountains and their products. *Encyclopedia of Volcanoes, Academic Press*, p. 321-329.
- \***Wolff, J.A.**, Grandy, J.S. & Larson, P.B. (2000) Interaction of mantle-derived magma with island crust? Trace element and oxygen isotope data from the Diego Hernandez Formation, Las Cañadas, Tenerife, Canary Islands. *J. Volcanol. Geotherm. Res.* 103, 343-366
- \***Wolff, J.A.**, Heikoop, C.E. & Ellisor, R. (2000) Hybrid origin of Rio Grande rift hawaiites. *Geology* 28, 203-206.
- 2002** \***Wolff, J.A.**, Balsley, S.D. & Gregory, R.T. (2002) Oxygen isotope disequilibrium between quartz and sanidine from the Bandelier Tuff, New Mexico, consistent with a short residence time of phenocrysts in rhyolitic magma. *J. Volcanol. Geotherm. Res.* 116, 119-135.
- \*\*Edgar, C.J., **Wolff, J.A.**, Nicholls, H.J., Cas, R.A.F. & Martí, J. (2002) A complex Quaternary multiple ignimbrite-forming phonolitic eruption: the Poris Member of the Diego Hernandez Formation (Tenerife, Canary Islands). *J. Volcanol. Geotherm. Res.* 118, 99-130.
- 2003** \*\*Strong, M. and **Wolff, J.A.** (2003) Compositional variations within scoria cones. *Geology* 31, 143-146.

**Wolff, J.A.** and Ramos, F.C. (2003) Pb isotope variations among Bandelier Tuff feldspars: no evidence for a long-lived silicic magma chamber. *Geology* 31, 533-536.

Sumner, J.M. & **Wolff, J.A.** (2003) Petrogenesis of mixed-magma, high-grade ignimbrite 'TL', on Gran Canaria: zoning, crystal transfer, and replenishment in a peralkaline silicic magma chamber. *J. Volcanol. Geotherm. Res.* 126, 109-126.

**2004** \*Ramos, F.C., **Wolff, J.A.** & Tollstrup, D.L. (2004) Measuring  $^{87}\text{Sr}/^{86}\text{Sr}$  variations in minerals and groundmass from basalts using LA-MC-ICPMS. *Chemical Geology* 211, 135-158.

Self, S., Gertisser, R., Thordarson, T., Rampino, M.R. & **Wolff, J.A.** (2004) Magma volume, volatile emissions, and stratospheric aerosols from the 1815 eruption of Tambora - revisited. *Geophysical Research Letters* 31, L20608, doi:10.1029/2004GL020925.

**2005** \***Wolff, J.A.**, Rowe, M.C., Teasdale, R., Gardner, J.N., Ramos, F.C. and Heikoop, C.E. (2005) Petrogenesis of pre-caldera mafic lavas, Jemez Mountains volcanic field (New Mexico, U.S.A.). *J. Petrol.* 46, 407-439.

Sumner, J.M., Blake, S., Matela, R. & **Wolff, J.A.** (2005) Spatter. *J. Volcanol. Geotherm. Res.* 142, 49-65.

\*Ramos, F.C., **Wolff, J.A.** & Tollstrup, D.L. (2005) Sr isotope disequilibrium in Columbia River flood basalts: evidence for rapid, shallow-level, open-system processes. *Geology* 33, 457-460.

\*\*Boroughs, S., **Wolff, J.A.**, Bonnicksen, B., Godchaux, M. & Larson, P.B. (2005) Large volume, low- $\delta^{18}\text{O}$  rhyolites of the central Snake River Plain, Idaho, USA. *Geology* 33, 821-824.

**2006** \*\*Pittari, A., Cas, R.A.F., Edgar, C.J., Nichols, H.J., **Wolff, J.A.** & Martí, J. (2006) The influence of palaeotopography on pyroclastic flow processes and facies architecture of a lithic-rich ignimbrite in a high gradient setting: the Abrigo ignimbrite, Tenerife, Canary Islands. *J. Volcanol. Geotherm. Res.* 152, 273-315.

\*Min, K., Reiners, P.W., **Wolff, J.A.**, Mundil, R. and Winters, R.L. (2006) (U-Th)/He dating of volcanic phenocrysts with high-U,Th inclusions, Bandelier Tuff, New Mexico. *Chemical Geology* 227, 223-235.

Soriano, C., Galindo, I., Martí, J. & **Wolff, J.A.** (2006) Conduit-vent structures and related proximal deposits in the Las Cañadas caldera, Tenerife, Canary Islands. *Bull. Volcanol.* 69, 217-231.

**2007** \*\*Edgar, C.J., **Wolff, J.A.**, Olin, P.H., Nichols, H.J., Cas, R.A.F., Reiners, P.W., Spell, T.L. & Martí, J. (2007) The late Quaternary Diego Hernandez Formation, Tenerife: volcanology of a cycle of repeated voluminous explosive phonolitic eruptions. *J. Volcanol. Geotherm. Res.* **160**, 59-85.

\*\*Rowe, M.C., **Wolff, J.A.**, Gardner, J.N., Ramos, F.C., Teasdale, R. and Heikoop, C.E. (2007) Development of a continental volcanic field: petrogenesis of pre-caldera intermediate and silicic rocks and origin of the Bandelier magmas, Jemez Mountains (New Mexico, U.S.A.). *J. Petrol.* **48**, 2063-2091.

\*\*Samuels, K.E., Broxton, D.E., Vaniman, D.T., Woldegabriel, G., **Wolff, J.A.**, Hickmott, D.D., Kluk, E.C. and Fittipaldo, M.M. (2007) Distribution of dacite lavas beneath the Pajarito Plateau, Jemez Mountains, New Mexico. *New Mexico Geol. Soc. Guidebook* **58**, 296-307.

**2008** \*\*Pittari, A., Cas, R.A.F., **Wolff, J.A.**, Nichols, H.J., Larson, P.B. and Martí, J. (2008) The use of lithic clast distributions in pyroclastic deposits to understand pre- and syn-caldera collapse processes; a case study of the Abrigo Ignimbrite, Tenerife, Canary Islands. *In Gottsmann, J, and Martí, J., eds., Caldera Volcanism. Developments in Volcanology* **10**, 97-142.

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\*Ramos, F.C., Buettner, J. and **Wolff, J.A.** Radium and Barium Partitioning in Young (<1100 years) Sanidine in Trachytes at Changbaishan Volcano, China: Variable Ages and Partition Coefficients Determined Using Mass Balance, Measured Crystals, and Theoretical Calculations. *IAVCEI General Assembly, Portland, USA, August 2017.*

\*Henry, C.D., Castor, S.B., Starkel, W.A., Ellis, B.S., **Wolff, J.A.**, Laravie, J.A., McIntosh, W.C. and Heizler, M.T. The McDermitt caldera, northern Nevada and southeastern Oregon, USA: Diverse 16 Ma, silicic magmatism during initiation of the Yellowstone Hotspot. *IAVCEI General Assembly, Portland, USA, August 2017.*

### *Other research-related activities*

#### **WSU Geoanalytical Laboratory**

**Director, 1999 – present.** Facilities under my direction are Thermo-ARL AdvantXP XRF, Agilent 7500 quadrupole ICP-MS, Finnigan Element 2 magnetic sector ICP-MS, Finnigan Neptune multicollector magnetic sector ICP-MS, New Wave Research 213 nm laser ablation cell, and Jeol 8500F field-emission electron microprobe.

During my time as Director, I have replaced analytical instruments in the GeoAnalytical Lab with grants from NSF as sole or lead PI (XRF, twice, and quadrupole ICPMS) or co-PI (electron microprobe, laser, MC-ICPMS), and oversaw the hiring of technical and research staff. These instruments form the core of the Lab which is the "go to" choice for Earth scientist researchers in 40 states and two dozen foreign countries. In the past 5 years, 19 senior personnel at WSU (faculty, post-docs, visiting researchers), 38 graduate students and 7 undergraduates at WSU have used data from the instrument. Over the same period, the lab has provided a service to more than 600 separate researchers from more than 200 different institutions.

In addition, I expanded the existing WSU GeoAnalytical Lab into heavy and radiogenic isotope analysis and microanalysis in 2000 - 2002 with two grants from NSF and the M.J. Murdock Trust plus a match from WSU, total project cost \$1.25M. The facility has been very successful, and has attracted new faculty, several postdocs, and over 100 external users; at least 40 WSU students have used the facility in addition to WSU faculty from CAS, CEA and CAHNRS.

### **Field experience**

#### *Personal field research experience*

**United Kingdom:** Ordovician and Cenozoic volcanics and intrusions, 8 weeks cumulative (1974-75, 2011)

**Tenerife, Canary Islands:** Quaternary phonolitic pyroclastics and general ocean island geology, 7 months cumulative (1976-78, 1994-2005)

**Gran Canaria, Canary Islands:** rheomorphic welded tuffs and other volcanic rocks, 10 days (1977), 1 week (2017)

**Brava, Cape Verde Islands:** Quaternary nephelinitic, phonolitic and carbonatitic pyroclastic deposits, 3.5 months cumulative (1985, 1989)

**Valles caldera, Jemez Mountains and Rio Grande Rift, NM:** Neogene volcanics, sedimentation and tectonics, including classic caldera association, 10 - 11 months cumulative (1984-2015)

**Trans-Pecos Texas volcanic province:** Paleogene mafic lavas and high-temperature rhyolites, 1 month cumulative (1984-89)

**Skaergaard intrusion, E. Greenland:** classic layered gabbro, 2 weeks (1990).

**Northwestern U.S. (Washington, Oregon, Idaho, Nevada):** Eocene to modern volcanic rocks, 16 weeks cumulative, 1997-2017.

**East African rift, Ethiopia:** rhyolitic ignimbrites and archaeological remains, 2 weeks (2016)

Total field research time, 31 months.

### **Professional field trips**

*Leader/co-leader:* Trans-Pecos Texas, 1988, 1989 (IAVCEI); Valles caldera, 1989 (IAVCEI); Tenerife, 1996 (AGU Chapman Conf.) and 2005 (Calderas Workshop); Snake River Plain (GSA), 2016; Columbia River Basalts (GSA), 2016; Rio Grande Rift, Valles caldera and San Juan Mountains (IAVCEI), 2017; Northwest US transect (IAVCEI), 2017

*Participant:* Taupo Zone, New Zealand, 1986; San Juan Mountains, CO, 1989; Vanuatu, 1993 (all IAVCEI); Bishop and Yosemite, CA, 2001 (GSA); Jemez Mountains, NM, 2007 (NMGS); Columbia River Basalts, 2009 (GSA); Ocean Island Workshop (U. Uppsala), 2017

### **Field teaching (excluding day trips)**

Taught UTA Field Camp for 11 years (1984-88, 1990-93, 1995-96). Served as Field Camp Director, 1990-1992. Responsible for teaching mapping and interpretation of Cenozoic volcanic fields, deformed Paleozoic sedimentary rocks, and high-grade Proterozoic metamorphic terranes.

Leader or co-leader of approximately 60 undergraduate and/or graduate field trips of more than one day's duration. Most of these trips have been to one of a few areas in North America dominated by Cenozoic igneous rocks: the Paleogene of Trans-Pecos Texas; the Neogene of the Jemez Mountains/Rio Grande Rift; or the Pacific Northwest.

### **Recent invited seminars and talks**

Oregon State University, 2014

University of Oregon, 2014 (2 seminars)

University of California, Berkeley, 2015

Washington State University, 2015

Central Washington University, 2015

Columbia Basin Geological Society, 2015

Geological Society of America, 2016

WSU Roots of Contemporary Issues featured lecture, 2016

New Mexico State University, 2017 (2 presentations)

ETH Zurich, 2017 (2 presentations)  
Uppsala University workshop on Gran Canaria, 2017

**Outreach**

Interviews often (average few/year) given to broadcast, online and print news services on volcanology, the School of the Environment, and the GeoAnalytical Laboratory. In 2013, the GeoAnalytical Lab and my research on the Columbia River basalts were featured in Washington State Magazine. In 2015 and 2016, I featured in the "Ask Dr. Universe" syndicated column.