

Books and Book Chapters

Berlo, K., Gardner, J.E., and Blundy, J.D., Timescales of Magma Degassing, in, Dosseto, A., Turner, S.P., and Orman, J.A. (eds.), *Timescales for Magmatic Processes*, in review.

Refereed Journal Articles (= papers authored by graduate or undergraduate students)*

In Press and Submitted:

- * Andrews, B.J., and Gardner, J.E., Turbulent dynamics of partially collapsing volcanic eruption columns, *Geology*, in press.
- * Szramek, L., Gardner, J.E., and Hort, M., Cooling induced crystallization of microlite crystals in two natural basaltic pumice, *Am. Mineral.*, in review.
- * Andrews, B.J., and Gardner, J.E., Effects of caldera collapse on conduit dimensions and magma decompression rate: An example from the 1800 ¹⁴C yr BP eruption of Ksudach Volcano, Kamchatka, Russia, *Earth Planet. Sci. Lett.*, in review.
- * Myers, N.R., Gardner, J.E., and Siebe, C., Vesiculation and fragmentation of dacite magma during the White Pumice Plinian eruption of Popocatepetl volcano, Mexico, *J. Volcanol. Geotherm. Res.*, in review.
- * Goepfert, K., and Gardner, J.E., Influence of pre-eruptive storage conditions and volatile contents on explosive Plinian style eruptions of basic magma, *Bull. Volcanol.*, in review.

Published:

Gardner, J.E., The impact of pre-existing gas on the ascent of explosively erupted magma, *Bull. Volcanol.*, 71, 835-, 2009.

- * Andrews, B.J., Gardner, J.E., and Housh, T.B., Repeated recharge, assimilation, and hybridization in magmas erupted from El Chichon as recorded by plagioclase and amphibole phenocrysts, *J. Volcanol. Geotherm. Res.*, 175, 415-426, 2008.

Castro, J.M., and Gardner, J.E., Did ascent rate control the explosive-effusive transition at the Inyo volcanic chain, California?, *Geology*, 36, 279-282, 2008.

- * Andrews, B., Gardner, J.E., Tait, S., Ponomareva, V.V., and Melekestsev, I.V., Dynamics of the 1800 ¹⁴C yr. B.P. caldera-forming eruption of Ksudach volcano, Kamchatka, Russia, *AGU Monograph Series*, 172, 325-342, 2007.

Gardner, J.E., Bubble coalescence in rhyolitic melts during decompression from high

pressure, *J. Volcanol. Geotherm. Res.*, 166, 161-176, 2007.

Gardner, J.E., A. Burgisser, and P. Stelling, Eruption and Deposition of the Fisher Tuff: evidence for the evolution of pyroclastic density currents, *J. Geol.*, 115, 417-435, 2007.

Gardner, J.E., Heterogeneous Bubble Nucleation in Highly Viscous Silicate Melts During Instantaneous Decompression from High Pressure, *Chem. Geol.*, 236, 1-12, 2007.

Suzuki, Y., J.E. Gardner, and J.F. Larsen, Experimental constraints on syneruptive magma ascent related to the phreatomagmatic phase of the 2000 A.D. eruption of Usu volcano, Japan, *Bull. Volcanol.*, *Bull. Volcanol.*, 69, 4232-4244, 2007.

* Arce, J.L., J.L. Macias, J.E. Gardner, and P.W. Layer, A 2.5 ka history of dacitic magmatism at Nevado de Toluca, Mexico: Petrological, $^{40}\text{Ar}/^{39}\text{Ar}$ dating, and experimental constraints on petrogenesis, *J. Petrol.*, 47, 457-479, 2006.

* Szmarek, L., J.E. Gardner, and J. Larsen, Degassing and microlite crystallization of basaltic andesite magma erupting at Arenal volcano, Costa Rica, *J. Volcanol. Geotherm. Res.*, 157, 182-201, 2006.

* Browne, B., and J.E. Gardner, The influence of magma ascent path on the texture, mineralogy, and formation of hornblende reaction rims, *Earth Planet. Sci. Lett.*, 246, 161-176, 2006.

Gardner, J.E., A. Burgisser, M. Hort, and M. Rutherford, Experimental and model constraints on degassing of magma during ascent and eruption, in Siebe, C., Macias, J.L., and Aquirre-Diaz, G.J., Neogene-Quaternary continental margin volcanism: A perspective from Mexico. *Geol. Soc. Am. Bull. Spec. Pap.* 402, 99-114, 2006.

Burgisser, A., and J.E. Gardner, Using hydraulic equivalences to discriminate transport processes of volcanic flows, *Geology*, 34, 157-160, 2006.

Castro, J.M., D.B. Dingwell, A. Nichols, and J.E. Gardner, New insights on the origin of flow bands in obsidian, in Manga, M. and Ventura, G., Kinematics and dynamics of lava flows, *Geol. Soc. Am. Spec. Pap.* 396, 55-66, 2005.

* Browne, B.L., and J.E. Gardner, Transport and deposition of pyroclastic material from the ~1000 A.D. caldera-forming eruption of Volcán Ceboruco, Nayarit, Mexico, *Bull. Volcanol.*, 67, 469-489, DOI: 10.1007/s00445-004-0390-6, 2005.

* Burgisser, A., and J.E. Gardner, Experimental constraints on degassing and permeability in volcanic conduit flow, *Bull. Volcanol.*, 67, 42-56, DOI: 10.1007/s00445-004-0356-8, 2005.

* Stelling, P., J.E. Gardner, and J. Beget, Eruptive history of Fisher Caldera, Alaska, USA, *J. Volcanol. Geotherm. Res.*, 139, 163-183, 2004.

- Larsen, J.F., and J.E. Gardner, Experimental study of water degassing from phonolite melts: Implications for volatile oversaturation during magmatic ascent, *J. Volcanol. Geotherm. Res.*, 134, 109-124, 2004.
- Larsen, J.F., M.-H. Denis, and J.E. Gardner, Experimental study of bubble coalescence in rhyolitic and phonolitic melts, *Geochim. Cosmochim. Acta*, 68, 333-344, 2004.
- Coombs, M., and J.E. Gardner, Reaction rim growth on olivines in silicic melts: Implications for magma mixing, *Am. Mineral.*, 89, 748-758, 2004.
- * Browne, B.L., and J.E. Gardner, The nature and timing of caldera collapse as indicated by accidental lithic fragments from the ~1000 A.D. eruption of Volcan Ceboruco, Mexico. *J. Volcanol. Geotherm. Res.*, 130, 93-105, 2004.
- * Harms, E., J.E. Gardner, and H.-U. Schminke, Phase equilibria in the Laacher See Tephra (East Eifel, Germany): Constraints on pre-eruptive storage conditions of a phonolitic magma reservoir. *J. Volcanol. Geotherm. Res.*, 134, 125-138, 2004.
- Gardner, J.E., and M.H. Denis, Rates of Heterogeneous Bubble Nucleation in Silicate Melts, *Geochim. Cosmochim. Acta*, 68, 3587-3597, 2004.
- * Izbekov, P., J.E. Gardner, and J.E. Eichelberger, Comagmatic granophyre and dacite from Karymsky volcanic centre, Kamchatka: experimental constraints for magma storage conditions, *J. Volcanol. Geotherm. Res.*, 131, 1-18, 2004.
- * Chertkoff, D.G., and J.E. Gardner, Nature and timing of magma interactions before, during, and after the caldera-forming eruption of Volcán Ceboruco, Mexico, *Contribs. Mineral. Petrol.*, 146, 715-735, 2004.
- * Stelling, P., J. Begét, C. Nye, J. Gardner, J.D. Devine, and R. George, Geology and petrology of ejecta from the 1999 eruptions of Shishaldin Volcano, Alaska, *Bull. Volcanol.*, 64: 548-561, 2002.
- Gardner, J.E., P.W. Layer, and M.J. Rutherford, Phenocrysts versus xenocrysts in the Toba Tuff: Implications for the petrogenesis of 2800 km³ of magma, *Geology*, 30, 347-350, 2002.
- Layer, P.W., and J.E. Gardner, Excess argon in Mount St. Helens plagioclase as a recorder of magmatic processes, *Geophys. Res. Lett.*, 28, 4279-4281, 2001.
- * Coombs, M.L., and J.E. Gardner, Shallow storage conditions for the rhyolite of the 1912 eruption at Novarupta, Alaska, *Geology*, 29, 775-778, 2001.
- Larsen, J.F., and J.E. Gardner, Experimental constraints on bubble interactions in rhyolitic melts: Implications for vesicle size distributions, *Earth Planet. Sci. Lett.*, 180, 201-214, 2000.
- Gardner, J.E., and S. Tait, The caldera forming eruption of Volcán Ceboruco, Mexico, *Bull. Volcanol.*, 62, 20-33, 2000.

- Gardner, J.E., M. Hilton, and M.R. Carroll, Bubble growth in highly viscous silicate melts during continuous decompression from high pressure, *Geochim. Cosmochim. Acta*, *64*, 1473-1483, 2000.
- Hort, M., and J.E. Gardner, Constraints on degassing of pumice clasts during Plinian volcanic eruptions based on model calculations, *J. Geophys. Res.*, *105*, 25981-26001, 2000.
- Rutherford, M.J., and J.E. Gardner, Rates of Magma Ascent, In Sigurdsson, H., ed., *Encyclopedia of Volcanoes*, Academic Press, pp. 207-218, 2000.
- Gardner, J.E., M. Hilton, and M.R. Carroll, Experimental Constraints on Degassing of Magma: Isothermal Bubble Growth During Continuous Decompression from High Pressure, *Earth Planet. Sci. Lett.*, *168*, 201-218, 1999.
- * Cottrell, E, J.E. Gardner, and M.J. Rutherford, Dynamic movement and changing storage conditions of large silicic magma bodies: Evidence from the Minoan rhyodacite, Santorini, Greece. *Contrib. Mineral. Petrol.*, *135*, 315-331, 1999.
- Gardner, J.E., S. Carey, and H. Sigurdsson, Plinian eruptions at Glacier Peak and Newberry volcanoes, USA: Implications for volcanic hazards in the Cascades Volcano Range, *Geol. Soc. Am. Bull.*, *110*, 173-187, 1998.
- Devine, J.D., M.J. Rutherford, and J.E. Gardner, Petrologic determination of magma ascent rates for the 1995-97 Soufriere Hills Volcano andesitic magma. *Geophys. Res. Lett.*, *25*, 3673-3676, 1998.
- Devine, J.D., M.D. Murphy, M.J. Rutherford, J. Barclay, R.S.J. Sparks, M.R. Carroll, S.R. Young, and J.E. Gardner, Petrologic evidence for pressure-temperature conditions and magma mixing in the new dome at Soufriere Hills Volcano, Montserrat. *Geophys. Res. Lett.*, *25*, 3673-3676, 1998.
- Barclay, J., M.R. Carroll, M.J. Rutherford, M.D. Murphy, J.D. Devine, J.E. Gardner, and R.S.J. Sparks, Experimental phase equilibria constraints on pre-eruptive storage conditions of the Soufriere Hills magma. *Geophys. Res. Lett.*, *25*, 3437-3440, 1998.
- Tait, S., R.M.E. Thomas, J.E. Gardner, and C. Jaupart, Constraints on cooling rates and permeabilities of pumice in an explosive eruption jet from colour and magnetic mineralogy, *J. Volcanol. Geotherm. Res.*, *86*, 79-91, 1998.
- Gardner, J.E., R.M.E. Thomas, C. Jaupart, and S. Tait, Fragmentation of magma during volcanic plinian eruptions, *Bull. Volcanol.*, *58*, 144-162, 1996.
- Gardner, J.E., S. Carey, M.J. Rutherford, and H. Sigurdsson, Influence of magma composition on the eruptive activity of Mount St. Helens, Washington, *Geology*, *23*, 523-526, 1995.
- Gardner, J.E., S. Carey, M. Rutherford, and H. Sigurdsson, Petrologic diversity in Mount

St. Helens dacites during the last 4,000 years: implications for magma mixing, *Contrib. Mineral. Petrol.*, 119, 224-238, 1995.

Gardner, J.E., M. Rutherford, S. Carey, and H. Sigurdsson, Experimental constraints on pre-eruptive water contents and changing magma storage prior to explosive eruptions of Mount St. Helens volcano, *Bull. Volcanol.*, 57, 1-17, 1995.

Devine, J.D., J.E. Gardner, H.P. Brack, G.D. Layne, and M.J. Rutherford, Comparison of microanalytical methods for estimation of H₂O contents of silicic volcanic glasses, *Am. Mineral.*, 80, 319-328, 1995.

Carey, S., J.E. Gardner, and H. Sigurdsson, The intensity and magnitude of post-glacial plinian eruptions of Mount St. Helens Volcano, *J. Volcanol. Geotherm. Res.*, 66, 185-202, 1995.

Laj, P., J.M. Palais, J.E. Gardner, and H. Sigurdsson, Modified HNO₃ seasonality in volcanic layers of a polar ice core: snow-pack effect or photochemical perturbation?, *J. Atmospher. Chem.*, 16, 219-230, 1993.

Gardner, J.E., H. Sigurdsson, and S. Carey, Eruption dynamics and magma withdrawal during the plinian phase of the Bishop Tuff eruption, Long Valley Caldera, *J. Geophys. Res.*, 96, 8097-8111, 1991.

Carey, S., H. Sigurdsson, J.E. Gardner, and W. Criswell, Variations of column height and magma discharge during the May 18, 1980 eruption of Mount St. Helens, *J. Volcanol. Geotherm. Res.*, 43, 99-112, 1990.