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LMU, Earth & Environmental Sciences, Theresienstr. 41/III, 80333 Munich, Germany
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Employment

Ludwig-Maximilians-Universit�t Post-doctoral researcher in Experimental & Physical Volcanology Grant European Research Council Advanced Grant EAVESDROP (No. 834225)	Munich, Germany 09/2019–ongoing
Ludwig-Maximilians-Universit�t Post-doctoral researcher in Experimental & Physical Volcanology Responsibility Cameca SX 100 Electron Probe Micro-Analyser coordinator	Munich, Germany 10/2015–08/2019

Education

Ludwig-Maximilians-Universit�t Ph.D. (Dr. rer. nat.), Volcanology; <i>Summa Cum Laude</i> (with highest honour) Thesis topic The life and death of heterogeneity in magmas: Implications for failure forecasting Supervisors Prof. Donald B. Dingwell & Prof. Yan Lavall�e	Munich, Germany 06/2011–09/2015
Institut de Physique du Globe de Paris M.Sc., Geology & Natural Hazards Thesis topic <i>Seismological aspects of Bouillante’s geothermal field, Guadeloupe, French West Indies</i> Supervisor Dr Philippe Jousset [French Geological Survey; now at GFZ Potsdam, Germany]	Paris, France 09/2008–09/2010
Universit� Denis Diderot B.Sc., Geosciences	Paris, France 09/2005–06/2008

Grants awarded

AGU Fall Meeting (2015) LMUexcellent travel grant	1,880 EUR
DAAD RISE (2013) Summer internship host	5,200 EUR
IAVCEI Assembly (2013) Student travel grant, support A	25,000 JPY
7th Cities on Volcanoes (2012) Student travel grant	1,200 USD

Teaching

Lecturer <i>Mineralogy</i> (2nd year B.Sc. course)	2020–2021
Lecturer <i>Data Processing in Earth Science</i> (3rd year B.Sc. course)	2017–ongoing
Assistant lecturer <i>Mineralogy</i> (2nd year B.Sc. course)	2015–2016
Teaching assistant <i>Petrophysics</i> (1st year M.Sc. course)	2012–2015
Teaching assistant <i>Melts, Glasses, Magmas</i> (post-graduate course)	2012–ongoing

Student supervision

�lo�se Bretagne Ph.D. candidate [co-supervised] Thesis topic <i>Permeability of loose magma mush</i>	Durham University, U.K. 01/2019–ongoing
Christopher Daly Ph.D. candidate Thesis topic <i>Sintering of lunar regolith simulant material</i>	LMU Munich, Germany 11/2020–02/2022
Laurence Wayne B.Sc. candidate [co-supervised] Thesis topic <i>Crystal migration during magma ascent</i>	Durham University, U.K. 09/2020–03/2021
Caron Vossen M.Sc. candidate [co-supervised] Thesis topic <i>Failure forecasting in silicate liquids</i>	LMU Munich, Germany 06–12/2017
Madeleine Barrow DAAD RISE intern (B.Sc.) Thesis topic <i>The microseismic signature of magma failure</i>	LMU Munich, Germany Summer 2013

Invited presentations

EGU General Assembly	<i>Can we forecast the failure of magma and how does this help us forecast eruptions?</i>	2018
AGU Fall Meeting	<i>Forecasting the failure of heterogeneous magmas</i>	2015
10th Euroconference on Rock Physics	<i>Predicting the failure of two phase viscoelastic suspensions</i>	2014
Institut de Physique du Globe de Strasbourg	<i>Cracking magmas: From the field to the lab</i>	2013

Professional service

Editorial Board Member	<i>Volcanica</i>	2017–ongoing
Editorial Board Member	<i>Scientific Reports</i> (Nature Publishing Group)	2017–ongoing

Skills

Languages French (native), English (fluent), German (good).

Programming Python (fluent), Cython (fluent), Julia (advanced), Matlab (advanced), C/C++ (good).

Laboratory Acoustic testing, rheology, chemical analysis, pycnometry, particle characterization.

Numerics Signal processing, inversion, finite differences, Monte Carlo method, image analysis.

Book chapters

- [2] Wadsworth, F.B., **Vasseur, J.**, Llewellyn, E.W., & Dingwell, D.B. (2022). “Hot sintering of melts, glasses and magmas” In: *Geological melts, Reviews in Mineralogy & Geochemistry*, 87, 801–840. Eds: Neuville, D.R., Henderson, G.S., & Dingwell, D.B.
- [1] Wadsworth, F.B., Witcher, T., **Vasseur, J.**, Dingwell, D.B., & Scheu, B. (2017). “When does magma break?” In: *Advances in Volcanology: Volcanic Unrest*, 171–184. Springer, Cham. Eds: Gottsmann, J., Neuberg, J., & Scheu, B.

Publications

- [51] **Vasseur, J.**, Wadsworth, F.B., & Dingwell, D.B. (2023). Shear thinning and brittle failure in crystal-bearing magmas arise from local non-Newtonian effects in the melt. *Earth and Planetary Science Letters*.
- [50] Colombier, M., Bernard, B., Wright, H., Le Pennec, J.L., Cáceres, F., Cimarelli, C., Heap, M.J., Samaniego, P., **Vasseur, J.**, & Dingwell, D.B. (2022). Conduit processes in crystal-rich dacitic magma and implications for eruptive cycles at Guagua Pichincha volcano, Ecuador. *Bulletin of Volcanology*, 84, 105.
- [49] Macente, A., Dobson, K.J., MacDonald, J., Wadsworth, F.B., & **Vasseur, J.** (2022). The evolution of paleo-porosity in basalts: Reversing pore filling mechanisms using X-ray computed tomography. *Transport in Porous Media*, 145, 697–717.
- [48] Wadsworth, F.B., Llewellyn, E.W., Castro, J.M., Tuffen, H., Schipper, C.I., Gardner, J.E., **Vasseur, J.**, Foster, A., Damby, D.E., McIntosh, I.M., Boettcher, S., Unwin, H.E., Heap, M.J., Farquharson, J.I., Dingwell, D.B., Iacovino, K., Paisley, R., Jones, C., & Whattam, J. (2022). A reappraisal of explosive–effusive silicic eruption dynamics: syn-eruptive assembly of lava from the products of cryptic fragmentation. *Journal of Volcanology and Geothermal Research*, 107672.
- [47] Pereira, L., **Vasseur, J.**, Wadsworth, F.B., Trixler, F., & Dingwell, D.B. (2022). Interparticle and Brownian forces controlling particle aggregation and rheology of silicate melts containing platinum-group element particles. *Scientific Reports*, 12, 9226.
- [46] Wadsworth, F.B., Llewellyn, E.W., Rennie, C., Watkinson, C., Mitchell, J., **Vasseur, J.**, Mackie, A., Mackie, F., Carr, A., Schmiedel, T., Witcher, T., Soldati, A., Jackson, L.E., Foster, A., Hess, K.-U., Dingwell, D.B., & Hand, R.J. (2022). Using obsidian in glass art practice. *Volcanica*, 5(1), 183–207.
- [45] **Vasseur, J.**, Wadsworth, F.B., Bretagne, E., & Dingwell, D.B. (2022) Universal scaling for the permeability of random packs of overlapping and nonoverlapping particles. *Physical Review E*, 105, L043301.
- [44] Wadsworth, F.B., **Vasseur, J.**, Anagnostopoulos, I., & Perez-Diaz, L. (2022). Estimating pi using geoscience. *Nature Geoscience*, Correspondence.
- [43] Seropian, G., Kennedy, B.M., Kendrick, J.E., Lavallée, Y., Nichols, A.R.L., von Aulock, F.W., Dingwell, D.B., Hess, K.-U., Lamur, A., Schaubert, J., **Vasseur, J.**, & Wadsworth, F.W. (2022). Vesiculation of rhyolitic melts under oscillatory pressure. *Frontiers in Earth Science*, 10, 812311.
- [42] González-García, D., Petrelli, M., Perugini, D., Giordano, D., **Vasseur, J.**, Paredes-Mariño, J., Marti, J., & Dingwell, D.B. (2022). Pre-eruptive conditions and dynamics recorded in banded pumices from the El Abrigo caldera-forming eruption (Tenerife, Canary Islands). *Journal of Petrology*, 63(3), 1–24.

- Colombier, M., **Vasseur, J.**, Houghton, B.F., Cáceres, F., Scheu, B., Kueppers, U., Thivet, S., Gurioli, L., Montanaro, C., Soldati, A., di Muro, A., & Dingwell, D.B. (2021). Degassing and gas percolation in basaltic magmas. *Earth and Planetary Science Letters*, 573, 117134.
- [41] **Vasseur, J.**, Wadsworth, F.B., Coumans, J.P., & Dingwell, D.B. (2021). Permeability of packs of polydisperse hard spheres. *Physical Review E*, 103, 062613.
- [40] Wadsworth, F.B., **Vasseur, J.**, Casas, A.S., Delmelle, P., Hess, K.-U., Ayris, P.M., & Dingwell, D.B. (2021). A model for the kinetics of high temperature reactions between polydisperse volcanic ash and SO₂ gas. *American Mineralogist*, 106, 1319–1332.
- [39] Yilmaz, T.I., Wadsworth, F.B., Gilg, H.A., Hess, K.-U., Kendrick, J.E., Wallace, P.A., Lavallée, Y., Utley, J., **Vasseur, J.**, Nakeda, S., & Dingwell, D.B. (2021). Rapid alteration of fractured volcanic conduits beneath Mt Unzen. (2021). *Bulletin of Volcanology*, 88, 34.
- [38] Cáceres, F., Scheu, B., Hess, K.-U., Cimarelli, C., **Vasseur, J.**, Kaliwoda, M., & Dingwell, D.B. (2021). From melt to crystals: The effects of cooling on Fe–Ti oxide nanolites crystallisation and melt polymerisation at oxidising conditions. *Chemical Geology*, 563, 120057.
- [37] Wadsworth, F.B., **Vasseur, J.**, Llewellyn, E.W., Brown, R.J., Tuffen, H., Gardner, J.E., Kendrick, J.E., Lavallée, Y., Dobson, K.J., Heap, M.J., Dingwell, D.B., Hess, K.-U., Schaubroth, J., von Aulock, F.W., Kushnir, A.R.L., & Marone, F. (2021). A model for permeability evolution during volcanic welding. *Journal of Volcanology and Geothermal Research*, 409, 107118.
- [36] Dobson, K.J., Allabar, A., Bretagne, E., Coumans, J., Cassidy, M., Cimarelli, C., Coats, R., Connolley, T., Courtois, L., Dingwell, D.B., di Genova, D., Fernando, B., Fife, J.L., Fyfe, F., Gehne, S., Jones, T., Kendrick, J.E., Kinvig, H., Kolzenburg, S., Lavallée, Y., Liu, E., Llewellyn, E.W., Madden-Nadeau, A., Madi, K., Marone, F., Morgan, C., Oppenheimer, J., Ploszajski, A., Reid, G., Schaubroth, J., Schlepuetz, C.M., Sellick, C., **Vasseur, J.**, von Aulock, F.W., Wadsworth, F.B., Wiesmaier, S., & Wanelik, K. (2020). Quantifying microstructural evolution in moving magma. *Frontiers in Earth Science*, 8, 287.
- [35] Wadsworth, F.B., Llewellyn, E.W., **Vasseur, J.**, Gardner, J.E., & Tuffen, H. (2020). Explosive-effusive volcanic eruption transitions caused by sintering. *Science Advances*, 6, 39.
- [34] Heap, M.J., Kushnir, A.R.L., **Vasseur, J.**, Wadsworth, F.B., Harlé, P., Baud, P., Kennedy, B.M., Troll, V.R., & Deegan, F.M. (2020). The thermal properties of porous andesite. *Journal of Volcanology and Geothermal Research*, 398, 106901.
- [33] **Vasseur, J.**, Wadsworth, F.B., & Dingwell, D.B. (2020). Permeability of polydisperse magma foam. *Geology*, 48(6), 536–540.
- [32] Colombier, M., Wadsworth, F.B., Scheu, B., **Vasseur, J.**, Dobson, K.J., Cáceres, F., Allabar, A., Marone, F., Schlepuetz, C.M., & Dingwell, D.B. (2020). In situ observation of the percolation threshold in multiphase magma analogues. *Bulletin of Volcanology*, 82(4), 32.
- [31] **Vasseur, J.**, & Wadsworth, F.B. (2019). The permeability of columnar jointed lava. *Journal of Geophysical Research*, 124(11), 11305–11315.
- [30] Wadsworth, F.B., **Vasseur, J.**, Schaubroth, J., Llewellyn, E.W., Dobson, K.J., Havard, T., Scheu, B., von Aulock, F.W., Gardner, J.E., Dingwell, D.B., Hess, K.-U., Colombier, M., Marone, F., Tuffen, H., & Heap, M.J. (2019). A general model for welding of ash particles in volcanic systems validated using in situ X-ray tomography. *Earth and Planetary Science Letters*, 525, 115726.
- [29] Casas, A.S., Wadsworth, F.B., Ayris, P.M., Delmelle, P., **Vasseur, J.**, Cimarelli, C., & Dingwell, D.B. (2019). SO₂ scrubbing during percolation through rhyolitic volcanic domes. *Geochemica Cosmochemica Acta*, 257, 150–162.
- [28] Wadsworth, F.B., Unwin, H.E., **Vasseur, J.**, Kennedy, B.M., Holzmueller, J., Scheu, B., Witcher, T., Adolf, J., Cáceres, F., Casas, A.S., Cigala, V., Clement, A.M., Colombier, M., Cronin, S., Cronin, M., Dingwell, D.B., Guimarães, L.F., Höltingen, L., Kueppers, U., Seropian, G., Stern, S., Teissier, A., Vossen, C.E.J., & Weichselgartner, N. (2018). Trashcano: Developing a quantitative teaching tool to understand ballistics accelerated by explosive volcanic eruptions. *Volcanica*, 1(2), 107–126.
- [27] **Vasseur, J.**, Wadsworth, F.B., & Dingwell, D.B. (2018). Forecasting multiphase magma failure at the laboratory scale using acoustic emission data. *Frontiers in Earth Science*, 6, 132.
- [26] Colombier, M., Scheu, B., Wadsworth, F.B., Cronin, S., **Vasseur, J.**, Dobson, K.J., Hess, K.-U., Tost, M., Yilmaz, T.I., Cimarelli, C., Brenna, M., Ruthensteiner, B., & Dingwell, D.B. (2018). Vesiculation and quenching during Surtseyan eruptions at Hunga Tonga-Hunga Ha'apai volcano, Tonga. *Journal of Geophysical Research*, 123(5), 3762–3779.
- [25] **Vasseur, J.**, & Wadsworth, F.B. (2017). Sphere models for pore geometry and fluid permeability in heterogeneous magmas. *Bulletin of Volcanology*, 79(11), 77–91.
- [24] Wadsworth, F.B., **Vasseur, J.**, Llewellyn, E.W., Dobson, K.J., Colombier, M., von Aulock, F.W., Fife, J.L., Wiesmaier, S., Hess, K.-U., Scheu, B., Lavallée, Y., & Dingwell, D.B. (2017). Topological inversions in coalescing granular media control fluid-flow regimes. *Physical Review E*, 96, 033113.
- [23]

- [22] **Vasseur, J.**, Wadsworth, F.B., Heap, M.J., Main, I.G., Lavallée, Y., & Dingwell, D.B. (2017). Does an inter-flaw length control the accuracy of rupture forecasting in geological materials? *Earth and Planetary Science Letters*, 475, 181–189.
- [21] di Genova, D., **Vasseur, J.**, Hess, K.-U., Neuville, D.R., & Dingwell, D.B. (2017). Effect of oxygen fugacity on the glass transition, viscosity and structure of silica- and iron-rich magmatic melts. *Journal of Non-Crystalline Solids*, 470, 78–85.
- [20] Wadsworth, F.B., **Vasseur, J.**, Llewellyn, E.W., Genareau, K., Cimarelli, C., & Dingwell, D.B. (2017). Size limits for rounding of volcanic ash particles heated by lightning. *Journal of Geophysical Research*, 122(3), 1977–1989.
- [19] Wadsworth, F.B., **Vasseur, J.**, Llewellyn, E.W., & Dingwell, D.B. (2017). Sintering of polydisperse viscous droplets. *Physical Review E*, 95, 033114.
- [18] Heap, M.J., Violay, M., Wadsworth, F.B., & **Vasseur, J.** (2017). From rock to magma and back again: The evolution of temperature and deformation mechanism in conduit margin zones. *Earth and Planetary Science Letters*, 463, 92–100.
- [17] Wadsworth, F.B., Heap, M.J., Damby, D.E., Hess, K.-U., Najorka, J., **Vasseur, J.**, Fahrner, D., & Dingwell, D.B. (2017). Local geology controlled the feasibility of vitrifying Iron Age buildings. *Scientific Reports*, 7, 40028.
- [16] Wadsworth, F.B., **Vasseur, J.**, & Damby, D.E. (2017). Evolution of vocabulary in the poetry of Sylvia Plath. *Digital Scholarship in the Humanities*, 32(3), 660–671.
- [15] Kendrick, J.E., Lavallée, Y., Varley, N., Wadsworth, F.B., Lamb, O.D., & **Vasseur, J.** (2016). Blowing off steam: Tuffisite formation as a regulator for lava dome eruptions. *Frontiers in Earth Science*, 4, 41.
- [14] Wadsworth, F.B., **Vasseur, J.**, Llewellyn, E.W., Schauthroth, J., Dobson, K.J., Scheu, B., & Dingwell, D.B. (2016). Sintering of viscous droplets under surface tension. *Proceedings of the Royal Society A*, 472(2188), 20150780.
- [13] Schauthroth, J., Wadsworth, F.B., Kennedy, B.M., von Aulock, F.W., Lavallée, Y., Damby, D.E., **Vasseur, J.**, Scheu, B., & Dingwell, D.B. (2016). Conduit margin heating and deformation during the AD 1886 basaltic Plinian eruption at Tarawera volcano, New Zealand. *Bulletin of Volcanology*, 78(2), 1–14.
- [12] Wadsworth, F.B., **Vasseur, J.**, Scheu, B., Kendrick, J.E., Lavallée, Y., & Dingwell, D.B. (2016). Universal scaling of fluid permeability during volcanic welding and sediment diagenesis. *Geology*, 44(3), 219–222.
- [11] **Vasseur, J.**, Wadsworth, F.B., Lavallée, Y., & Dingwell, D.B. (2016). Dynamic elastic moduli during isotropic densification of initially granular media. *Geophysical Journal International*, 204(3), 1721–1728.
- [10] Kennedy, B.M., Wadsworth, F.B., **Vasseur, J.**, Schipper, C.I., Jellinek, A.M., von Aulock, F.W., Hess, K.-U., Russell, J.K., Lavallée, Y., Nichols, A.R.L., & Dingwell, D.B. (2016). Surface tension driven processes densify and retain permeability in magma and lava. *Earth and Planetary Science Letters*, 433, 116–124.
- [9] Ayris, P.M., Cimarelli, C., Delmelle, P., Wadsworth, F.B., **Vasseur, J.**, Suzuki, Y.J., & Dingwell, D.B. (2015). A novel apparatus for the simulation of eruptive gas-rock interactions. *Bulletin of Volcanology*, 77(12), 1–5.
- [8] **Vasseur, J.**, Wadsworth, F.B., Lavallée, Y., Bell, A.F., Main, I.G., & Dingwell, D.B. (2015). Heterogeneity: The key to failure forecasting. *Scientific Reports*, 5, 13259.
- [7] Wadsworth, F.B., Damby, D.E., Hearne, R.L., Le Blond, J.S., **Vasseur, J.**, Najorka, J., Hess, K.-U., & Dingwell, D.B. (2015). The feasibility of vitrifying a sandstone enclosure in the British Iron Age. *Journal of Archaeological Science: Reports*, 4, 605–612.
- [6] Ashwell, P.A., Kendrick, J.E., Lavallée, Y., Kennedy, B.M., Hess, K.-U., von Aulock, F.W., Wadsworth, F.B., **Vasseur, J.**, & Dingwell, D.B. (2015). Permeability of compacting porous lavas. *Journal of Geophysical Research*, 120(3), 1605–1622.
- [5] Lavallée, Y., Wadsworth, F.B., **Vasseur, J.**, Russell, J.K., Andrews, G.D.M., Hess, K.-U., von Aulock, F.W., Kendrick, J.E., Tuffen, H., Biggin, A.J., & Dingwell, D.B. (2015). Eruption and emplacement timescales of ignimbrite super-eruptions from thermokinetics of glass shards. *Frontiers in Earth Science*, 3, 2.
- [4] Wadsworth, F.B., **Vasseur, J.**, von Aulock, F.W., Hess, K.-U., Scheu, B., Lavallée, Y., & Dingwell, D.B. (2014). Nonisothermal viscous sintering of volcanic ash. *Journal of Geophysical Research*, 119(12), 8792–8804.
- [3] **Vasseur, J.**, Wadsworth, F.B., Lavallée, Y., Hess, K.-U., & Dingwell, D.B. (2013). Volcanic sintering: Timescales of viscous densification and strength recovery. *Geophysical Research Letters*, 40(21), 5658–5664.
- [2] Kremers, S., Wassermann, J., Meier, K., Pelties, C., van Driel, M., **Vasseur, J.**, & Hort, M. (2013). Inverting the source mechanism of Strombolian explosions at Mt. Yasur, Vanuatu, using a multi-parameter dataset. *Journal of Volcanology and Geothermal Research*, 262, 104–122.
- [1] Lavallée, Y., Mitchell, T.M., Heap, M.J., **Vasseur, J.**, Hess, K.-U., Hirose, T., & Dingwell, D.B. (2012). Experimental generation of volcanic pseudotachylytes: Constraining rheology. *Journal of Structural Geology*, 38, 222–233.