

# Curriculum Vitae

**Mathieu Colombier**

Ph.D.

Ludwig Maximilians University  
Department of Earth and Environmental Sciences  
Theresienstrasse 41/ III D-80333 München  
+49(0)8921804134  
mathieu.colombier@min.uni-muenchen.de

## Research experience

---

- 2019-2020**      **University Professor at Ludwig-Maximilians-Universität**
- 2018-2019**      **Postdoctoral researcher in Experimental and Physical Volcanology at Ludwig-Maximilians-Universität**
- 2015-2018**      **Ph.D. at Ludwig-Maximilians-Universität, funded by the ERC project EVOKES**  
supervised by Bettina Scheu, Ulrich Kueppers and Donald Dingwell. Projects: (i) Eruptive processes during Surtseyan eruptions (ii) Percolation threshold, pore connectivity and permeability in volcanic rocks and magmas
- Sept-Nov 2014**      **Research technician contract at Laboratoire Magmas et Volcans of Clermont-Ferrand, funded by IRD**  
supervised by Jean-Luc Le Pennec and Olivier Roche. Project: Textures, grain size and morphology of tephra from the Mocho volcano, Chile
- Mar-Jun 2014**      **Research technician contract at Laboratoire Magmas et Volcans of Clermont-Ferrand, funded by LabEx CLERVOLC**  
supervised by Lucia Gurioli. Project: Permeability and textures of basaltic volcanic rocks
- Jan-Jun 2013**      **2nd year of M. Sc. research project at Laboratoire Magmas et Volcans of Clermont-Ferrand**  
supervised by Lucia Gurioli and Timothy Druitt. Project: Textural characterization of trachytes from the 9400 BP Vulcanian eruption of Kilian volcano, Chaîne des Puys, France
- Apr-Jun 2012**      **1st year of M. Sc. research project at Laboratoire Magmas et Volcans of Clermont-Ferrand**  
supervised by Christian Nicollet. Project: Analysis of the F-Cl couple in the amphiboles of metagabbros from fast and slow spreading mid oceanic ridges

## Education

---

2015-2018	<b>Ph. D. (Dr. rer. nat.), Volcanology; Summa Cum Laude (with highest honor) at Ludwig-Maximilians-Universität</b>
2011-2013	<b>M. Sc., Volcanology and Petrology at Laboratoire Magmas et Volcans, University Blaise Pascal of Clermont-Ferrand</b>
2008-2011	<b>B. Sc., at Joseph Fourier University of Grenoble.</b>

## Grants awarded

---

2020	<b>Eurovolc TNA project :</b>	2,100 EUR
	Funded proposal for fieldwork at Piton de la Fournaise volcano, La Réunion, France. "TEPHRA: TEXTURAL Properties, tHERMAL history and monitoRING of explosive bAsaltic eruptions"	
2019-2021	<b>LMU Mentoring Program:</b>	8,000 EUR
	Funding for business trips, conferences, student assistance	
2017	<b>Swiss Light Source:</b>	60,000 EUR
	Funded proposal for in situ vesiculation experiments at the synchrotron of the Paul Scherrer Institute, Villigen, Switzerland. "Hysteresis processes in large volcanic eruptions: the evolution from pumice to obsidian"	

## Publications

---

12	<b>Colombier, M.</b> , Shea, T., Burgisser, A., Druitt, T.H., Gurioli, L., Müller, D., Cáceres, F., Hess, K-U., Dingwell, D.B., Rheological change and degassing during a trachytic Vulcanian eruption at Kilian Volcano, Chaîne des Puys, France. DOI: 10.1007/s00445-020-01420-5. <i>Accepted in Bulletin of Volcanology</i>
11	Burgisser, A., Arbaret, L., Martel, C., Forien, M. and <b>Colombier, M.</b> , 2020. The role of oxides in the shallow vesiculation of ascending

magmas. *Journal of Volcanology and Geothermal Research*, 406, p.107072.

- 10 Cáceres, F., Wadsworth, F.B., Scheu, B., **Colombier, M.**, Madonna, C., Cimarelli, C., Hess, K.U., Kaliwoda, M., Ruthensteiner, B. and Dingwell, D.B., 2020. Can nanolites enhance eruption explosivity?. *Geology*, 48(10), pp.997-1001.
- 9 Heinrich, M., Cronin, S. J., Torres-Orozco, R., **Colombier, M.**, Scheu, B., & Pardo, N. (2020). Micro-porous pyroclasts reflecting multi-vent basaltic-andesite Plinian eruptions at Mt. Tongariro, New Zealand. *Journal of Volcanology and Geothermal Research*, 106936.
- 8 **Colombier, M.**, Wadsworth, F.B., Scheu, B. et al. In situ observation of the percolation threshold in multiphase magma analogues. *Bull Volcanol* 82, 32 (2020). <https://doi.org/10.1007/s00445-020-1370-1>
- 7 **Colombier, M.**, Mueller, S.B., Kueppers, U., Scheu, B., Delmelle, P., Cimarelli C., Cronin, S.J., Brown, R.J., Tost, M., Dingwell, D.B., (2019) "Diversity of soluble salt concentrations on volcanic ash aggregates from a variety of eruption types and deposits" *Bulletin of Volcanology* 81 :39
- 6 Wadsworth, F. Ben, Wadsworth, F.B., Vasseur, J., Schaubert, J., Llewellyn, E.W., Dobson, K.J., Havard, T., Scheu, B., Aulock, F.W. Von, Gardner, J.E., Dingwell, D.B., Hess, K., **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 A general model for welding of ash particles in volcanic systems validated using in situ X-ray tomography. *Earth Planet. Sci. Lett.* 525, 115726.
- 5 **Colombier, M.**, Scheu, B., Kueppers, U., Cronin, S., Mueller, S.B., Hess, K-U, Wadsworth, F. B., et al. "In situ granulation by thermal stress during subaqueous volcanic eruptions." *Geology* 47, no. 2 (2019): 179-182.
- 4 **Colombier, M.**, Scheu, B., Wadsworth, F. B., Cronin, S., Vasseur, J., Dobson, K. J., et al. (2018). Vesiculation and quenching during Surtseyan eruptions at Hunga Tonga-Hunga Ha'apai volcano, Tonga. *Journal of Geophysical Research: Solid Earth*, 123, 3762–3779.
- 3 Wadsworth, F.B., Vasseur, J., Llewellyn, E.W., Dobson, K.J., **Colombier, M.**, von Aulock, F.W., Fife, J., 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*, 96.
- 2 **Colombier, M.**, Wadsworth, F. B., Gurioli, L., Scheu, B., Kueppers, U.,

Di Muro, A., & Dingwell, D. B. (2017). The evolution of pore connectivity in volcanic rocks. *Earth and Planetary Science Letters*, 462, 99-109.

1

**Colombier, M.**, Gurioli, L., Druitt, T. H., Shea, T., Boivin, P., Miallier, D., & Cluzel, N. (2017). Textural evolution of magma during the 9.4-ka trachytic explosive eruption at Kilian Volcano, Chaîne des Puys, France. *Bulletin of Volcanology*, 79(2), 17.

## Citation metrics

---

**Google Scholar** h-index 5, i10-index 3, citations 130  
**ResearchGate** score 20.32, reads 4741

## Laboratory experience and skills

---

X-ray micro-tomography  
In situ synchrotron experiments  
Permeability measurements  
Pore connectivity measurements  
Experimental volcanology  
Morphology analysis of ash  
Density and porosity measurements  
2D and 3D textural analysis of volcanic rocks  
Optical dilatometry experiments  
Leaching analysis  
Microprobe analysis  
SEM analysis  
Raman spectroscopy  
Grain size distribution  
Componentry

## Field experience

---

### 2020

Sampling at Guagua Pichincha volcano, Ecuador (10 days)

### 2017

Field work at Stromboli volcano (10 days). Assisting in monitoring the explosive activity.

### Field trips during M. Sc. and B. Sc.

Phlegrean fields, Monte Somma-Vesuvio, Stromboli and Vulcano, Italy (6 days). Monts Dore-Sancy stratovolcano, France (6 days). Chaîne des Puys, France (5 days).

### Additional

Tungurahua, Pululahua, Quilotoa and Cotopaxi volcanoes (Ecuador), Eifel volcanoes (Germany), Mount St. Helens (USA).

## Teaching experience

---

**2018-ongoing**     **Lecturer:** Thermodynamics (3<sup>rd</sup> semester B. Sc. Course)  
Phase equilibria (3<sup>rd</sup> semester B. Sc. Course)  
Petrology (4<sup>th</sup> semester B. Sc. Course)  
Rock-forming minerals (3<sup>rd</sup> semester B. Sc. Course)  
Geomaterials (1<sup>st</sup> semester B. Sc. Course)  
Geomaterials (3<sup>rd</sup> semester B. Sc. Course)  
Applied Physics and Chemistry of Melts (3<sup>rd</sup> semester M. Sc. Course)

**2016-ongoing**     **Teaching assistant:** Melt, Glasses, Magmas post-graduate course

## Languages

---

**French:** mother tongue

**English:** fluent

**Spanish:** bilingual with Ecuadorian accent

**Italian:** good

**German:** good

## Interests

---

**Sports:** Football, Bouldering, Biking, Hiking, Climbing, Taekwondo, Tennis

**Travels, Music, Cooking...**