

Christian Huber, PhD

Professor

Department of Earth, Environmental & Planetary Sciences | Brown University

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1. Education

- 2009: PhD in Earth and Planetary Sciences, University of California, Berkeley, CA
- 2004: Bachelor of Science in Physics, Université de Genève, Switzerland
- 2001: Master of Science in Geophysics, Université de Genève, Switzerland
- 1998: Bachelor of Science in Earth Sciences, Université de Genève, Switzerland

2. Professional Appointments

- 2022 – now: Professor, Brown University
- 2018 – 2022: Associate Professor, Brown University
- 2016 – 2018: Assistant Professor, Brown University
- 2016 – 2016: Associate Professor (with tenure), Georgia Institute of Technology
- Assistant Professor, Georgia Institute of Technology (through 2016)
- Adjunct Professor, Civil and Environmental Engineering, Georgia Institute of Technology (through 2016)
- 2009 – 2011: Postdoctoral Fellow, Georgia Institute of Technology
- 2005 – 2009: Graduate Research Assistant, UC Berkeley

3. Academic Honors

- 2015: Hishashi Kuno Award, American Geophysical Union
- 2015: Class of 1940 Teaching Effectiveness Award, Georgia Institute of Technology
- 2015: National Science Foundation (NSF) CAREER Award
- 2012: Petroleum Research Fund (PRF) ACS Young Investigator Award
- 2010: Paul Niggli Medal, Swiss Society of Mineralogy and Petrology
- 2009-2011: Postdoctoral Fellowship, Swiss National Fund for Science
- 2009: Louderback Award, UC Berkeley

5. Publications

Authorship Key:

+ denotes undergraduate student advisee

* denotes graduate student advisee

denotes postdoc advisee

Books & Chapters

- Huber, C. (2025). Introduction to Numerical Modeling in Earth and Planetary Sciences. Oxford University Press.
- Huber, C., *Su, Y. (2017). A pore-scale investigation of the dynamic response of saturated porous media to transient stresses. Wiley.
- Dufek, J, Huber, C., and Karlstrom, L. (2013). Melt Generation and Magma chamber processes. In Modeling volcanic processes: Cambridge University Press.

Refereed Journal Articles (In Review)

- Florez, D., Pec, M., and Huber, C., The effects of contact area, grain size, and aspect ratio on repacking in magma mushes, submitted to JGR-Solid Earth.
- Beckwith, J., et al., Huber, C., et al., Transient liquid-and solid-dominated inflation of an upper crustal magma chamber: insights from the Carlingford Complex (Ireland), submitted to Journal of Petrology.
- *Gilkysen, N., Huber, C., Nathan, E., and Buffo, J., Brine entrainment during ice shell growth on icy worlds, submitted to JGR-planets.
- *Das, U., Huber, C., Parmentier., E.M., and Florez, D., Pore closure in planetary crusts: a revised model, submitted to JGR-planets.

Published Journal Articles

- 113. *Williams, T., Parman, S., and Huber, C. (in press). Constraints on Noble Gas Variability in OIB and MORB. GCubed.
- 112. *Chatterjee, A., Townsend, M., Huber, C., et al. (in press). Spatio-temporal trends on Mars. EPSL.
- 111. *Chatterjee, A., et al. (in press). Phosphorus zoning in olivines. Geochimica et Cosmochimica Acta.
- 110. Keller, F., Troch, J., Townsend, M., and Huber, C. (in press). Volatile resorption in silicic systems. Nature Communications.
- 109. Townsend, M., et al. (in press). Stress pinch points from glacial loading. Nature Communications.
- 108. Roche, O., et al., Huber, C. (2025). Shear-induced bubble nucleation in magmas. Science.
- 107. Holness, M., et al., Huber, C. (2025). Microstructural investigation of the Portrush Sill. Lithos.
- 106. Huber, C., et al. (2025). Mechanics of multiphase magmas. Annual Reviews of Earth and Planetary Sciences.
- 105. Humphreys, M., et al., Huber, C. (2025). Crystal mush processes. Nature Reviews Earth and Environment.
- 104. *Chatterjee, A.P., Huber, C., et al. (2025). Magma chambers on Mars. JGR-planets.
- 103. *Florez, D., Huber, C., et al. (2025). Repacking-Driven Compaction. Journal of Petrology.
- 102. Dalton, C., Huber, C., et al. (2025). Slowdown in Seafloor Spreading. Gcubed.

- 101. Huber, C., et al. (2025). Particle sedimentation. Gcubed.
- 100. +Coonin, A., Huber, C., et al. (2024). Magma chamber response to ice unloading. Gcubed.
- 99. *Lark, L., Huber, C., et al. (2024). Planetary interior configuration. JGR-planets.
- 98. Bachmann, O., and Huber, C. (2024). Volcanic/plutonic ratio. Lithos.
- 97. Singer, B., et al., Huber, C. (2024). Ice Forcing in Continental Arc Magma Plumbing Systems. JVGR.
- 96. *Florez, D., Huber, C., et al. (2024). Repacking in Compacting Mushes. JGR-solid Earth.
- 95. Huber, C., and Toramaru, A. (2024). Increase in magma supply to Sakurajima. Geology.
- 94. #Troch, J., Huber, C., et al. (2024). Water effect on alkali trace element diffusion. GCA.
- 93. *Nathan, E., et al. (2024). Cratering and Tectonic History of Titania. Planetary Science Journal.
- 92. +Scholz K., et al. (2023). Exsolved H₂O-CO₂ Phase on Magma Chamber Growth. Gcubed.
- 91. Badt, N., et al. (2023). Thermal pressurization in localized faults. JGR-solid earth.
- 90. Faroughi, S. A., and Huber, C. (2023). Viscosity of Crystal-rich Magmas. JVGR.
- 89. *Lark, L., et al. (2023). Evidence for a carbon-rich Mercury. EPSL.
- 88. Tsai, V., et al. (2023). Geologic Parameterization of Seismic Tomography. GJI.
- 87. Buffo, J., et al. (2023). Geometry of Freezing Impacts Ice Composition. JGR-Planets.
- 86. Hoyos, S., *Florez, D., et al. (2022). Crystal shape control on mushes. GRL.
- 85. Schlieder, T.D., et al., Huber C. (2022). Mount St. Helens thermal storage. Journal of Petrology.
- 84. Cordell, D., et al. (2022). Constraining magma reservoir conditions. Gcubed.
- 83. *Rasht-Behesht, M., Huber, C., et al. (2022). PINNs for Wave Propagation. JGR-solid Earth.
- 82. *Lark, L., et al. (2022). Sulfides in Mercury's Mantle. GRL.
- 81. Cornet, J., et al. (2022). Melt extraction from mushy reservoirs. Geosphere.
- 80. Cordell, D., et al. (2022). Detectability of melt-rich lenses. JVGR.
- 79. Valdivia, P.A., et al. (2022). Mafic explosive volcanism. Bull. Volc.
- 78. Popa, R., et al. (2021). Volcanic decision predetermined by storage. Nature Geoscience.
- 77. #Troch., J., et al. (2022). Magmatic fluids in silicic reservoirs. American Mineralogist.
- 76. *Buffo, J., et al. (2021). Ice-Ocean Interface of Icy Worlds. Icarus.
- 75. *Florez, D., et al. (2021). Modeling Lunar Pyroclasts. JGR-planets.
- 74. *Lark, L., et al. (2021). Recurring Slope Lineae on Mars. Icarus.
- 73. *Buffo, J. J., et al. (2020). Europa's ice shell dynamics. JGR-planets.
- 72. Berton, M., et al. (2020). Dissolved volatiles on freezing dynamics. JGR-planets.

- 71. *Rashtbehesht, S. and Huber, C. (2020). Melt-rich lenses teleseismic inversions. JGR solid earth.
- 70. #Townsend, M., and Huber, C. (2020). Critical magma chamber size. Geology.
- 69. Huber, C., et al. (2020). Physical models for recurring slope lineae. Icarus.
- 68. Huber, C., et al. (2019). He loss in U-Th-He dating. Gcubed.
- 67. Huber, C., et al. (2019). Optimal depth of magma chamber growth. Nature Geoscience.
- 66. #Girona, T., et al. (2019). Origin of shallow volcanic tremor. JGR.
- 65. #Townsend, M., et al. (2019). Eruption frequency and reservoir growth. Gcubed.
- 64. DiPalma, P., et al. (2019). Solute transport in porous media. Geofluids.
- 63. *Li, M., et al. (2019). Dropwise condensation. IJHMT.
- 62. Degruyter, W., et al. (2019). Volatile escape. Phil. Trans. A.
- 61. Bachmann, O., and Huber, C. (2018). Phase separation in magmatic systems. Journal of Petrology.
- 60. Huber, C., and Parmigiani, A. (2018). Three phase compaction. JGR.
- 59. *Buffo, J. J., et al. (2018). Reactive Transport in Sea Ice. JGR-Oceans.
- 58. #Girona, T., et al. (2018). Sensitivity to lunar cycles. Nature Sci. Rep.
- 57. *Karani, H., et al. (2017). Fractional-order thermal convection. Phys. Rev. E.
- 56. Ojha, L., et al. (2017). Seasonal Slumps in Juventae Chasma. JGR-Planets.
- 55. Degruyter, W., et al. (2017). Volatiles and Reheating Silicic Magmas. G-cubed.
- 54. Di Palma, P., et al. (2017). Pore-scale simulations. J. Contam. Hydrol.
- 53. Huber, C., et al. (2017). Carbonate recrystallization rates. GCA.
- 52. Parmigiani, A., et al. (2017). Magma reservoir outgassing. G-cubed.
- 51. *Li, M., et al. (2017). Condensation with noncondensable gas. IJHMT.
- 50. *Su, Y., and Huber, C. (2017). H₂O/CO₂ vesiculation. JGR.
- 49. *Karani, H., and Huber, C. (2017). Natural convection in porous media. Phys. Rev. E.
- 48. *Karani, H., and Huber, C. (2017). Convective patterns. J. Fluid Mech.
- 47. Sliwinski, J., et al. (2017). Pre-eruptive thermal rejuvenation. Contrib. Mineral. Petrol.
- 46. *Faroughi, S., and Huber, C. (2017). Concentrated suspensions of rigid spheroids. Rheol. Acta.
- 45. Bachmann, O., and Huber, C. (2016). Silicic magma reservoirs. Am. Mineral.
- 44. *Su, Y., et al. (2016). Crystallization-driven exsolution. JGR.
- 43. #Bouvet de Maisonneuve, C., et al. (2016). How olivines record magmatic events. Contrib. Mineral. Petrol.
- 42. #Parmigiani, A., et al. (2016). Bubble accumulation. Nature.
- 41. #Degruyter, W., et al. (2016). Magma reservoir response to recharge. Geology.
- 40. *Faroughi, S., and Huber, C. (2016). Soil texture analyses. Geotechnique.
- 39. *Palma, P., et al. (2015). Lattice Boltzmann interface reactions. Adv. Water Resour.
- 38. Cooper, L., et al. (2015). Tenerife phonolites volatile budget. Geology.

- 37. Huber, C., and *Su, Y. (2015). Dynamic response of porous media. *Geofluids*.
- 36. Druhan, J., et al. (2015). Isotopic gradients. *RiMG*.
- 35. #Bouvet de Maisonneuve, et al. (2015). 2006 Rabaul eruption. *Geol. Soc. Lond.*
- 34. *Karani, H., and Huber, C. (2015). Conjugate heat transfer. *Phys. Rev. E*.
- 33. *Faroughi, S., and Huber, C. (2015). Thermal conductivity of composites. *J. Appl. Phys.*
- 32. *Faroughi, S., and Huber, C. (2015). Hindered velocity in suspensions. *GRL*.
- 31. *Faroughi, S., and Huber, C. (2015). Rheology of emulsions and suspensions. *Rheol. Acta*.
- 30. *Faroughi, S., and Huber, C. (2014). Rheology of rigid bimodal particles. *Phys. Rev. E*.
- 29. Gelman, S., et al. (2014). Identifying crystal graveyards. *EPSL*.
- 28. #Degruyter, W., and Huber C. (2014). Eruption frequency model. *EPSL*.
- 27. #Parmigiani, A., et al. (2014). Mush microphysics. *JGR*.
- 26. Huber, C., et al. (2014). Bubble growth and coalescence. *JGR*.
- 25. Huber, C., et al. (2014). Heterogeneous dissolution model. *GCA*.
- 24. Huber, C., et al. (2013). Channelization of nonwetting fluids. *WRR*.
- 23. Nguyen, C., et al. (2013). G-cubed.
- 22. Huber, C., et al. (2012). Metal extraction and transport. *G-cubed*.
- 21. Matthews, N., et al. (2012). Ti diffusion in quartz. *Journal of Petrology*.
- 20. Huber C., et al. (2012). Crystal-poor vs crystal-rich ignimbrites. *Geology*.
- 19. Bachmann, O., et al. (2012). *Contrib. Mineral. Petrol.*
- 18. Matthews, N., et al. (2012). *Contrib. Mineral. Petrol.*
- 17. #Parmigiani, A., et al. (2011). Multiphase porous media flows. *J. Fluid Mech.*
- 16. Huber, C., et al. (2011). Algorithm for boundary conditions. *IJMPC*.
- 15. Huber, C., et al. (2011). Noble gas diffusion in solids. *GCA*.
- 14. Huber, C., et al. (2011). Reactivation of locked mushes. *EPSL*.
- 13. Huber, C., et al. (2010). Coupled diffusion. *JCP*.
- 12. Huber, C., et al. (2010). Limitations of melting. *JVGR*.
- 11. Huber, C., et al. (2010). Volatiles effects on heat transfer. *Journal of Petrology*.
- 10. Watkins, J., et al. (2009). Calcium isotope fractionation. *GCA*.
- 9. Huber, C., et al. (2009). Homogenization in silicic magma. *EPSL*.
- 8. Parmigiani, A., et al. (2009). Lattice Boltzmann thermal flows. *Eur. Phys. J.*
- 7. Watkins, J., et al. (2009). Spherulite growth. *Contrib. Mineral. Petrol.*
- 6. Huber, C., et al. (2009). Miscible bubble rising. *Eur. J. Mech. B*.
- 5. Huber, C., et al. (2008). Lattice Boltzmann model for melting. *IJHFF*.
- 4. Almendros, J., et al. (2002). Seismic sources at Kilauea. *BSSA*.

7. Service

- Director of Graduate Studies, Brown University (2024-Present)
- Editor, *Geophysical Research Letters* (2019-Present)

- NSF Panelist (10 times, 2016-2026)