

Curriculum Vitae

PERSONAL DETAILS

Name: Emmanuel GUILLERM
Date of birth: January 9th, 1991
Nationality: French
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(dates are in *jj/mm/yy*)

EDUCATION

15/10/2015 **PhD** in Environmental Geosciences, University Lyon 1 Claude Bernard, France
– 06/12/2019 *Diploma delivered 12/12/2019*

01/09/2013 **Master of Science** “Earth and Planets” at CRPG, Lorraine University, Nancy, France.
– 31/08/2014 *Diploma delivered 25/11/2014*

01/09/2011 **Geologist-Engineer school** at Ecole Nationale Supérieure de Géologie (ENSG), Nancy, France.
– 31/08/2014 *Diploma delivered 07/10/2014*

09/05/2011 **Competitive examinations to enter Ecole Nationale Supérieure de Géologie (ENSG)**,
– 01/07/2011 successful candidate.

01/09/2009 **Classe préparatoire aux grandes écoles** (« prep school ») “Biology, Chemistry, Physics
– 31/08/2011 and Earth Sciences”, Lycée Chateaubriand, Rennes

18/06/2009 **Baccalauréat examination**, successful candidate *summa cum laude*
– 24/06/2009

RESEARCH EXPERIENCE

01/09/2022 **Marie Skłodowska-Curie postdoctoral fellow**
– present CROSSROADS project: Climate ReOrganizations at Synoptic Scale as Recorded in the Offshore Archives of the Dead Sea. Reconstruction of chemical composition, lake level, paleohydrology and paleotemperatures in the Dead Sea during the Holocene.
Main host institution: GFZ German Research Centre for Geosciences, Potsdam, Germany
Outgoing phase host institution (09/2022 to 08/2024): Binghamton University, NY, USA
Host researchers: Pr. Achim Brauer, Distinguished Pr. Tim K. Lowenstein

01/09/2021 **Azrieli postdoctoral fellow**
– 31/08/2022 Reconstructing late Pleistocene lake levels of the Dead Sea
Host institutions: Leon Charney school of marine sciences, Dr. Moses Strauss department of geosciences, University of Haifa, Israel.
Host researcher: Dr. Nicolas WALDMANN

15/10/2015 **PhD research:** “Turning halite fluid inclusions into accurate paleothermometers with
– 06/12/2019 Brillouin spectroscopy: development of a new method and application to the Last Interglacial in the Dead Sea”
Host institutions: Laboratoire de Géologie de Lyon Terre Planètes et Environnement (LGL-TPE) and Institute of Light and Matter (ILM), University Lyon 1, France.
Supervision: Dr. Véronique GARDIEN (LGL-TPE, University Lyon 1), Pr. Frédéric CAUPIN (ILM, University Lyon 1)

- 07/01/2013 **Masters research:** “Metamorphic and structural record of the thermo-mechanical
–12/06/2014 evolution of the Hellenides orogeny” (Lorraine University, France)
Supervision: Olivier VANDERHAEGHE (Lorraine University)
- 03/12/2012 **Undergraduate research intern:** Tomography on chondrites (CRPG, Nancy, France)
–28/12/2012 *Supervision:* Camille SOULIE

PEER-REVIEWED PUBLICATIONS

Bibliometrics (January 2024)

Google scholar: Citations = 208; h-index = 5; i10-index = 3

Key {x}: number of citations (Google Scholar)

Guillerm, E., Gardien, V., Waldmann, N.D., Brall, N.S., Ariztegui, D., Schwab, M.J., Neugebauer, I., Lach, A. and Caupin, F. (2023): Reconstruction of Dead Sea lake level and mass balance back to 237 ka BP using halite fluid inclusions. *Quaternary Science Reviews*, 303, p.107964. {1}

Olson, K.J., **Guillerm, E.**, Peuple, M.D., Lowenstein, T.K., Gardien, V., Caupin, F., Feakins, S.J., Tierney, J.E., Stroup, J., Lund, S. and McGee, D. (2023): Application of Brillouin thermometry to latest Pleistocene and Holocene halite from Searles Lake, California, USA. *Earth and Planetary Science Letters*, 602, p.117913. {3}

Brall N. S., Gardien V., Ariztegui D., Sorrel P., **Guillerm E.**, Caupin F. (2022): Reconstructing lake bottom water temperatures and their seasonal variability in the Dead Sea Basin during MIS5e. *The Depositional Record*, 8(2), pp.616-627. {5}

Guillerm E., Gardien V., Ariztegui D. & Caupin F. (2020): Restoring Halite Fluid Inclusions as an Accurate Palaeothermometer: Brillouin Thermometry Versus Microthermometry. *Geostandards and Geoanalytical Research*, 44(2), 243-264. {9}

Caupin F., Holten V., Qiu C., **Guillerm E.**, Wilke M., Frenz M., Teixeira J. and Soper A.K. (2018): Comment on “Maxima in the thermodynamic response and correlation functions of deeply supercooled water“. *Science*, 360(6390). {37}

Goy C., Potenza M.A.C., Dederá S., Tomut M., **Guillerm E.**, Kalinin A., Voss K., Schottelius A., Petridis N., Prosvetov A., Tejada G., Fernández J.M., Trautmann C., Caupin F., Glasmacher U., and Grisenti R.E. (2018): Shrinking of Rapidly Evaporating Water Microdroplets Reveals their Extreme Supercooling. *Physical Review Letters* 120, 015501. {70}

Holten V., Qiu C., **Guillerm E.**, Wilke M., Rička J., Frenz M., and Caupin F. (2017): Compressibility anomalies in Stretched Water and Their Interplay with Density Anomalies. *J. Phys. Chem. Lett.* 8, 5519-5522. {75}

CONFERENCES AND WORKSHOP PRESENTATIONS

Key: * Talk - † Poster. Presenter underlined.

Guillerm E., Lowenstein T. K., Olson K., Krüger Y., Brall N., Arnuk W. D., Weldeghebriel M., Gardien V., Caupin F., Lensky N., and Brauer A. (2023): Advances in quantitative climate reconstructions using hypersaline lake evaporites. *GSA Connects*, 15-18 October, Pittsburgh, PA, USA. *

Guillerm E., Bärenbold F., Brauer A., Caupin F., Bouffard D., Gardien V., and Lowenstein T. K. (2023): Bridging evaporites and climate: towards a general model for hypersaline lakes. *GSA Connects*, 15-18 October, Pittsburgh, PA, USA. †

Arnuk W. D., **Guillerm E.**, Olson K., Lowenstein T. K., and Krüger Y. (2023): Nucleation-Assisted Microthermometry in halite fluid inclusions: a novel method for obtaining precise and accurate paleotemperatures from lake evaporites. *GSA Connects*, 15-18 October, Pittsburgh, PA, USA. *

Olson, K., **Guillerm, E.**, Peuple, M., Lowenstein, T., Gardien, V., Caupin, F., Feakins, S., Tierney, J., Stroup, J., Lund, S. and McGee, D. (2023): Applying Brillouin thermometry as a novel tool for reconstructing temperatures, depths, and seasonal biases of Holocene/Pleistocene Searles Lake, California. *European Geosciences Union*, Vienna, 23-28 April 2023. *(Invited Talk)

Guillerm E., Gardien V., Waldmann N. D., Brall N., Ariztegui D., Schwab M. J., Neugebauer I., Lach A., and Caupin F. (2023): Unlocking Dead Sea lake levels and mass budget beyond 70 ka BP using deep core 5017-1-A. *Israel Geological Society meeting*, En Gedi, Israel, 21-22 February 2023. *

Guillerm E., Lowenstein T. K., Gardien V., Caupin F., & Brauer A. (2022): Unlocking temperatures and lake levels archived in Holocene Dead Sea halite fluid inclusions. DEUQUA, Potsdam, Germany, 25-29 September 2022. †

Guillerm E., Gardien V., Brall N., Ariztegui D., Schwab M. J., Neugebauer I., Waldmann N., Lach A., Caupin F. (2022): Higher state of the North Atlantic Oscillation during the Last Interglacial (130-115 ka BP): evidence from temperature and hydrology in the Dead Sea. *European Geosciences Union*, Vienna, 23-27 May 2022. *

Guillerm E., Gardien V., Waldmann N., Brall N., Ariztegui D., Schwab M. J., Neugebauer I., Lach A., Caupin F. (2022): Unlocking the temperature and volume data archived in fluid inclusions. *ETN SaltGiant final Workshop*, IGP, Paris, 17-19 May 2022. *(Invited Talk)

Guillerm E., Gardien V., Brall N., Schwab M. J., Lach A., Neugebauer I., Ariztegui D., Caupin F. (2020): Unraveling temperature and hydrological conditions of salt deposits by measuring the speed of sound in halite fluid inclusions: the case of the Last Interglacial Dead Sea. *European Geosciences Union*, Vienna, 4-8 May 2020. *

Olson K. J., **Guillerm E.**, Gardien V., Caupin F., Lowenstein T. K., Peuple M. D., Feakins S. J., Tierney J., McGee D., Stroup J., Janick J. J., Brush J. A. (2019): A new surface water paleotemperature proxy: applying Brillouin thermometry to reconstruct temperatures of Pleistocene Searles Lake. *GSA Annual Meeting*, Phoenix, 22-25 Sept. 2019. *

Guillerm E., Gardien V., **Ariztegui D.** & Caupin F. (2018): Turning evaporites into temperature archives using Brillouin spectroscopy – Application to the Dead Sea. *International Sedimentological Congress*, Québec, 13-17 Aug. 2018. *

Guillerm E., Gardien V., Ariztegui D. & Caupin F. (2017): A new paleothermometer for evaporitic environments: Brillouin spectroscopy. *International Meeting of Sedimentology*, Toulouse, 10-12 Oct. 2017. *

Guillerm E., **Gardien V.**, Ariztegui D. & Caupin F. (2017): A new paleothermometer for evaporitic environments: Brillouin spectroscopy on halite fluid inclusions. *Goldschmidt*, Paris, 13-18 Aug. 2017. †

Guillerm E., Gardien V. & Caupin F. (2017): Negative pressure amplification by precipitation in a confined droplet and consequences for paleotemperatures reconstruction. *10th Liquid Matter Conference*, Ljubljana, 17-21 July 2017. *

Guillerm E., Gardien V., Caupin F. & Ariztegui D. (2017): A new paleothermometer for evaporitic halite: Brillouin spectroscopy. *ECROFI*, Nancy, 23-29 June 2017. * + †

Guillerm E., Gardien V & Caupin F. (2016): How to study fluid inclusions when their host is part of the system? *Réunion des Sciences de la Terre*, Caen, 24-28 Oct. 2016. *

Urbino Summer School of Paleoclimatology (USSP), Urbino, Italy, July 2016. †

Guillerm E., Gardien V. & Caupin F. (2016): A new paleothermometer for evaporitic halite: Brillouin spectroscopy. *European Geosciences Union*, Vienna, 23-28 Apr. 2016. †

Guillerm E., Vanderhaeghe O., Scheffer C. & Tarantola A. (2014): Burial and syn-orogenic exhumation in the Hellenides belt: structural and petrographic record in Southern Evia, Greece. *Réunion des Sciences de la Terre*, Pau, 27-31 Oct. 2014. †

AWARDS AND GRANTS

- **Marie Skłodowska-Curie Action Postdoctoral Fellowship:** CROSSROADS project, awarded in 2021 (265,000 €)
- **Azrieli International Postdoctoral Fellowship:** awarded in 2021 (98,000 €)
- **Doctor with graduate school H2O'Lyon certification.** H2O'Lyon aims to build a research school on Watershed Sciences. It is based on a resolutely interdisciplinary approach integrating Human and Social Sciences, Physical and Engineering Sciences, and Life Sciences to better understand all the issues related to their operation and management.
- **Best-poster laureate** at biennial conference on magmatic and fluid inclusions, ECROFI 2017 23-29 June Nancy

TEACHING EXPERIENCE

01/09/2018 **Teaching assistant (96h per year)**, Earth Sciences Department, Ecole Normale

–31/08/2019 Supérieure (ENS),
Lyon, France.

- Petrology practicals for 2nd year undergraduate students
- Gravimetry, tectonics and volcanology practicals for 2nd year undergraduate students
- Field class: tectonics and metamorphism for 3rd year undergraduate students
- Field class: introduction to field geology for 1st year undergraduate students

01/09/2016 **Teaching assistant (64h per year)**, Earth Sciences Department, Lyon 1 University,
–31/08/2018 France.

- General geosciences practicals for 1st year undergraduate students
- Cartography practicals for 1st year undergraduate students
- Practical on species evolution and fossils for 1st year undergraduate students

MENTORING

- Yannick Bras, MSc student on ocean, climate and atmosphere. Research project on the characterization of aqueous salt solutions using Brillouin and Raman spectroscopies.
- Xavier Lejeune, Earth Sciences undergraduate student. Research project on the history of the Variscan Pilat Massif (France) by studying the fluid inclusions trapped in quartz minerals.

SCIENCE DISSEMINATION AND POPULARIZATION

- 19/05/2023 **Primary school field trips at Binghamton University.** I hosted fourth-graders (~ age 10) visiting Binghamton University, and performed lab experiments with them to explore the dynamics of oceanic circulation.
- 24/05/2023
- 26/04/2022 **Conference for Azrieli Postdoctoral and Faculty Fellows.** I gave a talk to a non-specialist audience of doctors from science and humanities, all Azrieli fellows, presenting the jist of my research in a way that is accessible to the general public. The video link is available here: <https://youtu.be/KeUfytVxbY4>.
- 30/05/2017 **“Barcamp” at the University library, Lyon 1 University:** I gave a talk for general public outreach on my PhD subject. This talk was filmed and can be watched on Youtube (in French): <https://www.youtube.com/watch?v=ROI9MfUki10&t=4s>
- 01/04/2015 **Animation leader, scientific mediator and guide** at “Musée Promenade”, the geosciences, natural history and ecology museum of Digne-les-Bains, France.
-01/10/2015 During this sabbatical between my MSc studies and PhD thesis, I had several missions: (i) I created and led animations for children from elementary schools to raise their awareness on past and present biodiversity, water cycle and water availability, resources, landscapes; (ii) I led geo-tours on the field in the French Alps; (iii) I operated as a guide of the botanical and geological collections of the museum.

LANGUAGES

French (mother tongue)

English (fluent; Cambridge Certificate of Advanced English grade B, passed in 2013)

Spanish (read, written, spoken)

German (beginner)