

Advancing lithium geochemistry in groundwater: How I secured PhD and postdoc positions via collaborations between academia and industry.

ELZA J.M. DUGAMIN

STARLAB - Central Michigan University

Presenting Author: elza.dugamin.m.j@gmail.com

I achieved my Ph.D. in December 2022 in France and currently I work as a postdoctoral researcher in USA. My Ph.D. project aimed to examine lithium geochemistry in groundwater and sedimentary geological settings. The global demand for Li is soaring because of its use in rechargeable batteries. The approaches I applied during my Ph.D. ranged from laboratory to basin scale utilizing experimental, field, and numerical modeling methods.

My Ph.D. project was a collaborative project between the University of Lorraine and TotalEnergies. We successfully estimated the global Li resources [1] and developed a new model that shows the favorable or unfavorable conditions for Li enrichment in formation waters from sedimentary basins [2]. A third paper is in progress. This paper aims to: i) define the characteristics of Li-rich paleofluids, ii) identify potential sources of Li in the reservoir host rocks, and iii) better understand the Li enrichment processes of percolating waters in the Rhine Graben.

Recently I began a new exciting chapter of my professional career. Via a collaboration between the STARLAB - Central Michigan University and Equinor, we are using molecular geochemistry to identify the mechanisms responsible for Li enrichments.

In addition of showing new scientific insights, I will share my experience as an early career research on the benefits of navigating a research path between academic and industrial systems.

[1] Dugamin, E.J.M., Richard, A., Cathelineau, M., Boiron, M.C., Despinois, F., & Brisset, A. (2021), Groundwater in sedimentary basins as potential lithium resource: a global prospective study. *Scientific reports* 11, 21091.

[2] Dugamin, E.J.M., Cathelineau, M., Boiron, M.C., Richard, A., & Despinois, F. (2023), Lithium enrichment processes in sedimentary formation waters. *Chemical Geology* 635, 121626.