

## **Controls on Li partitioning and isotopic fractionation in inorganic calcite.**

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The Li isotopic composition ( $\delta^7\text{Li}$ ) of foraminiferal calcite has been interpreted as a faithful record of oceanic  $\delta^7\text{Li}$ , and indicative of silicate weathering through the Cenozoic<sup>1</sup>. However, a recent study of cultured foraminifera has suggested that  $\delta^7\text{Li}$  and Li/Ca are sensitive to ocean pH and carbon chemistry<sup>2,3</sup>. To interpret the Li geochemistry of calcite as a palaeo-climate archive, we must fully understand the controls on its incorporation into foraminiferal calcite from seawater.

We will present the  $\delta^7\text{Li}$  and Li/Ca of synthetic calcite, precipitated under controlled conditions where pH, DIC and temperature were independently varied. The influence of these variables on the Li geochemistry of calcite will be examined with reference to possible Li incorporation pathways<sup>4</sup>, and the implications for our interpretation of the Li palaeo-archive will be discussed.

<sup>1</sup> Misra, S. & Froelich, P.N. 2012. doi:10.1126/science.1214697

<sup>2</sup> Vigier et al. 2015. doi:10.1016/j.crte.2014.12.001

<sup>3</sup> Roberts et al. 2018. doi:10.1016/j.gca.2018.02.038

<sup>4</sup> Fügler et al. 2019. doi:10.1016/j.gca.2018.12.040