Evidence of HIMU seamount on the Farallon Plate: Application of *in-situ* Sr-Pb isotope analysis to Franciscan lawsonite-bearing metagreywacke

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Since bulk isotopic composition of oceanic basalt is susceptible to element remobilization during alteration process, there is a risk of causing misread of geochemical signatures from bulk metabasaltic rocks in subduction complex. As Hara et al. (2018) demonstrated, however, *in-situ* Sr-Pb isotope analysis of lawsonite in high-pressure metabasaltic rocks has a great potential for tracing the geochemical signatures reflecting the igneous protolith. In this study, we have applied the method to lawsonite in metasedimentary rocks to explore clastic components of a trench-fill sediment. A jadeite-bearing Franciscan metagreywacke from Pacheco Pass area, east-central Diablo Range, California Coast Ranges was selected for geochemical reconnaissance.

Lawsonites in the Franciscan metagreywacke record a high initial Pb isotope ratios ($^{206}Pb/^{204}Pb$ = 18.74–19.66, $^{207}Pb/^{204}Pb$ = 15.58–15.70 and $^{208}Pb/^{204}Pb$ = 38.41–39.34). This Pb-isotope signature suggests that a protolith of the metagreywacke have contained a debris derived from a HIMU-type basalt. Considering the maximum depositional age of the metagreywacke at ~102 Ma, the underflow of the Farallon Plate beneath continental crust of the North American Plate would have carried a HIMU seamount to a Franciscan trench.

Our study has demonstrated the potential application of 'lawsonitology' as sedimentary provenance analyses for metamorphosed accretionary complex. Moreover, the results would manifest that Pb isotopic signature of ancient oceanic basalt can be detectable from Ca-Al silicate mineral, such as lawsonite, epidote and pumpellyite, in metamorphic rocks.

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