

Table captions

Table S1. Operational parameters for ICP-MS instruments and laser ablation systems in *in situ* trace element and Sr isotope analysis.

Table S2. EPMA measurement results for major elements (wt%) in HZZ-2 and TARIM calcite grains.

Table S3. Trace element composition of HZZ-2 and TARIM calcite determined by LA-ICP-MS ($\mu\text{g}\cdot\text{g}^{-1}$).

Table S4. Sr isotope ratios of HZZ-2 and TARIM calcite and reference materials determined using LA-MC-ICP-MS.