

Supporting Information for
MacDonald et al. (2024 -TEKTONIKA)

**Fingerprinting Fluid Source in Calcite Veins: Combining LA-
ICP-MS U-Pb Calcite Dating with Trace Elements and Clumped
Isotope Palaeothermometry**

J. M. MacDonald¹, J. VanderWal², N. M. W. Roberts³, I. Z. Winkelstern⁴, J. W. Faithfull⁵, A.
J. Boyce⁶

¹School of Geographical and Earth Sciences, University of Glasgow, Glasgow G12 8QQ,
UK

²Barrick Gold, Hwy 17, Marathon, ON, P0T 2E0, Canada

³Geochronology and Tracers Facility, British Geological Survey, Environmental Science
Centre, Nottingham, NG12 5GG, UK

⁴Department of Geology, Grand Valley State University, Padnos Hall of Science, 1 Campus
Drive, Allendale, MI 49401, USA

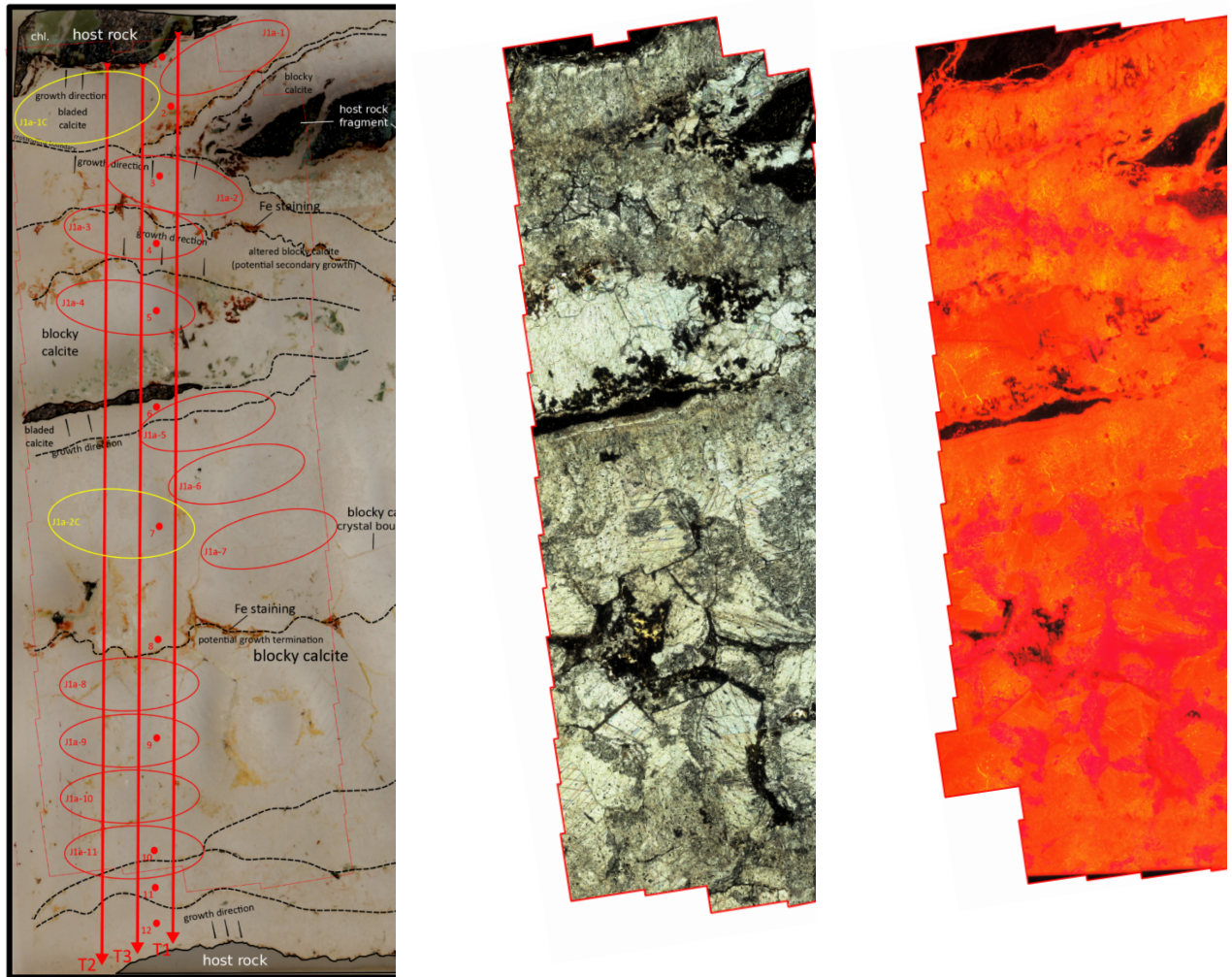
⁵The Hunterian, University of Glasgow, Glasgow G12 8QQ, UK

⁶NERC Isotope Community Support Facility, Scottish Universities Environmental Research
Centre, Rankine Avenue, Scottish Enterprise Technology Park, East Kilbride G75 0QF, UK

Figure SI-1.

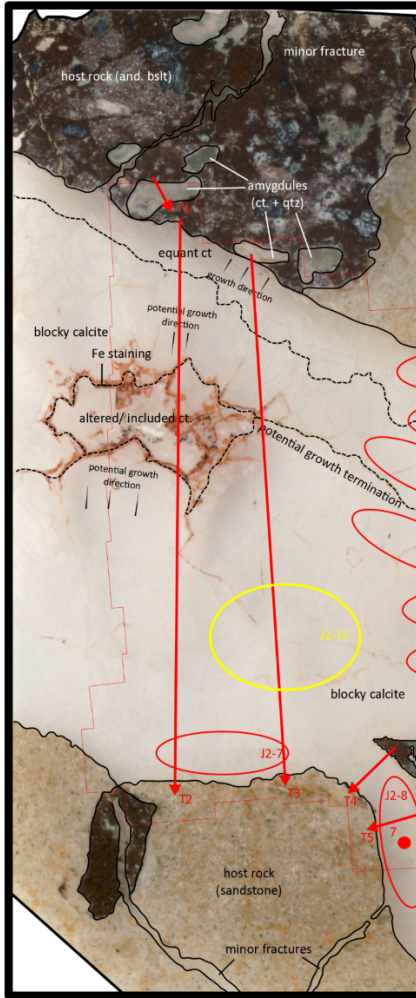
Scan of thin sections of the vein samples (left panel), annotated with locations of LA-ICP-MS spot analyses (red circles), C and O isotope powder samples (dashed red ellipses) and clumped isotope powder samples (yellow ellipses); stitched plane polarised light photomicrographs (centre panel); stitched cathodoluminescence photomicrographs (right panel). [Red lines denote data not used in this study].

a) Sample JV17-1

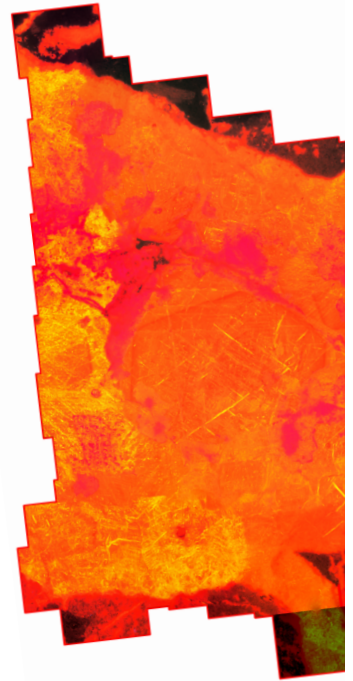
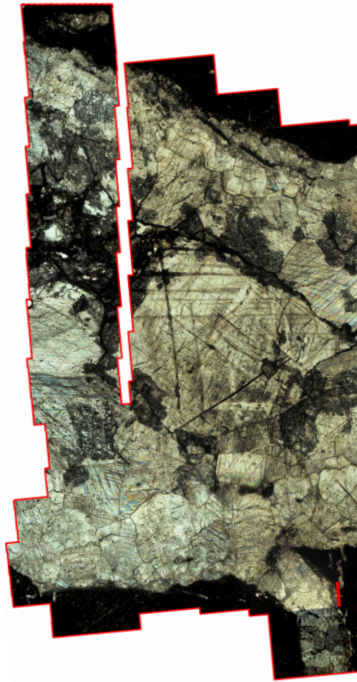


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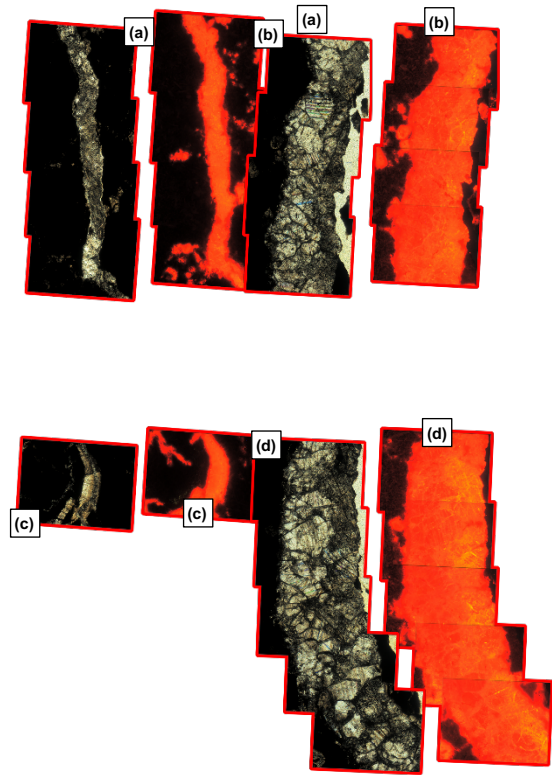
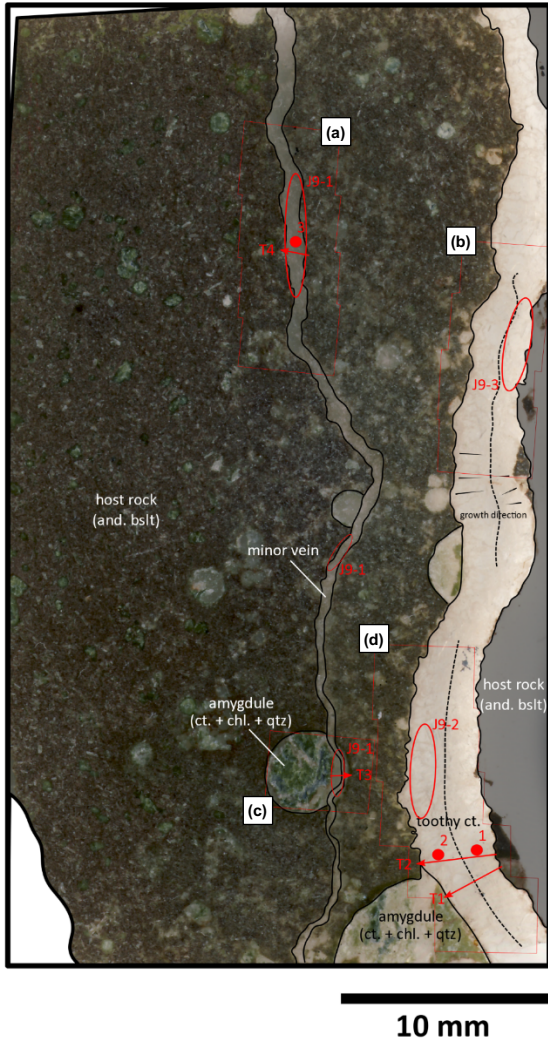
b) Sample JV17-2



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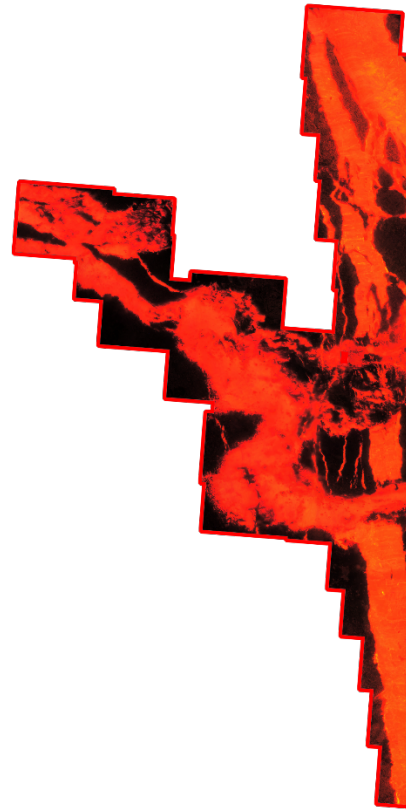
c) Sample JV17-9.



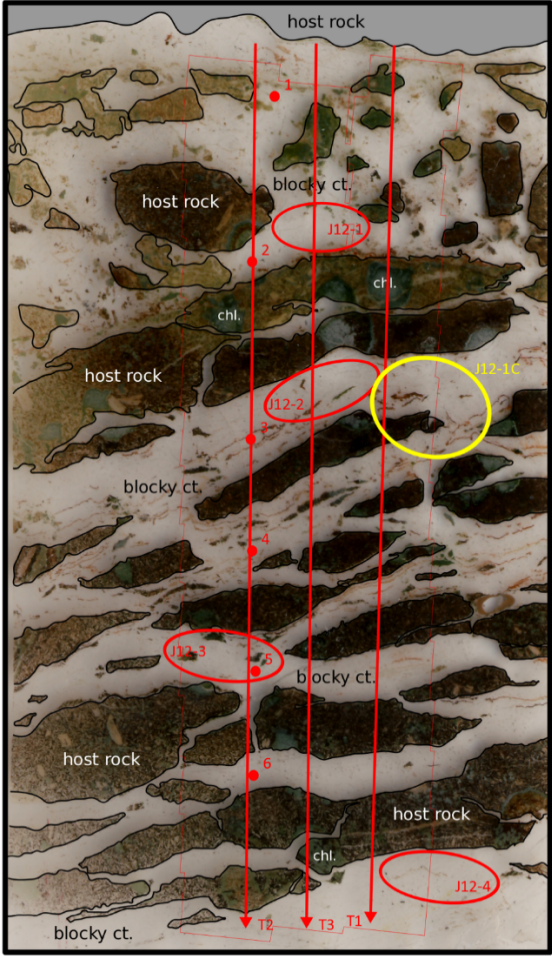
d) Sample JV17-11



10



e) Sample JV17-12



10 mm

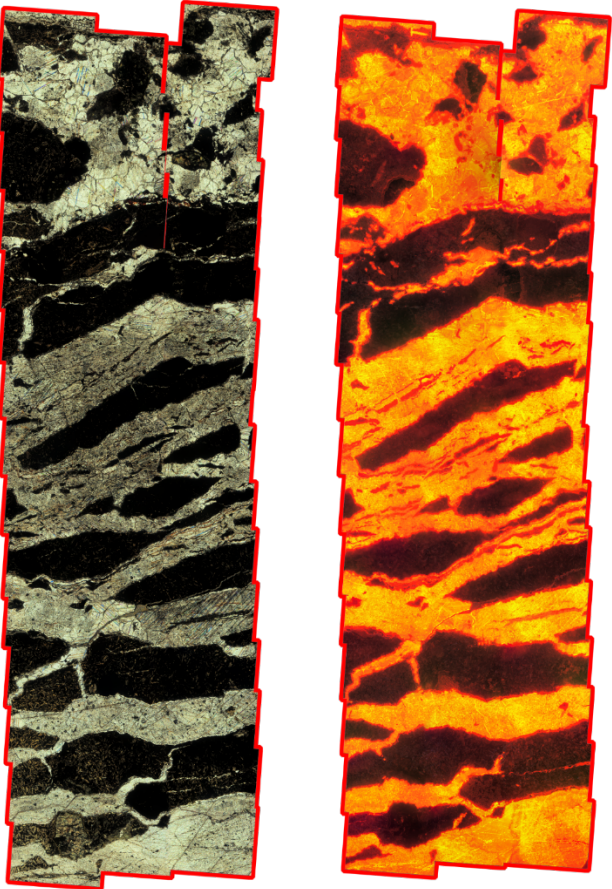


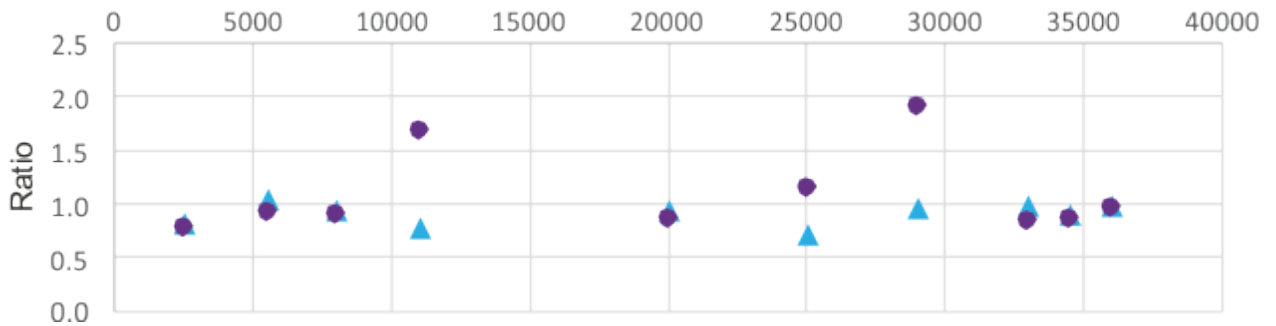
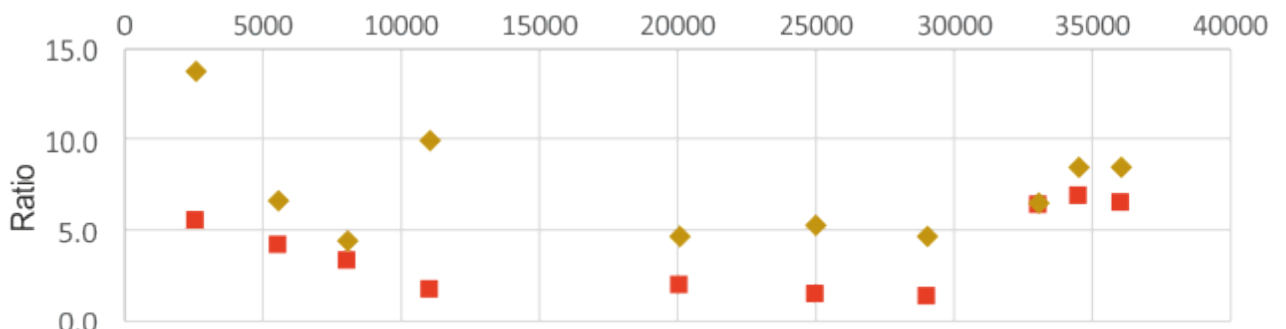
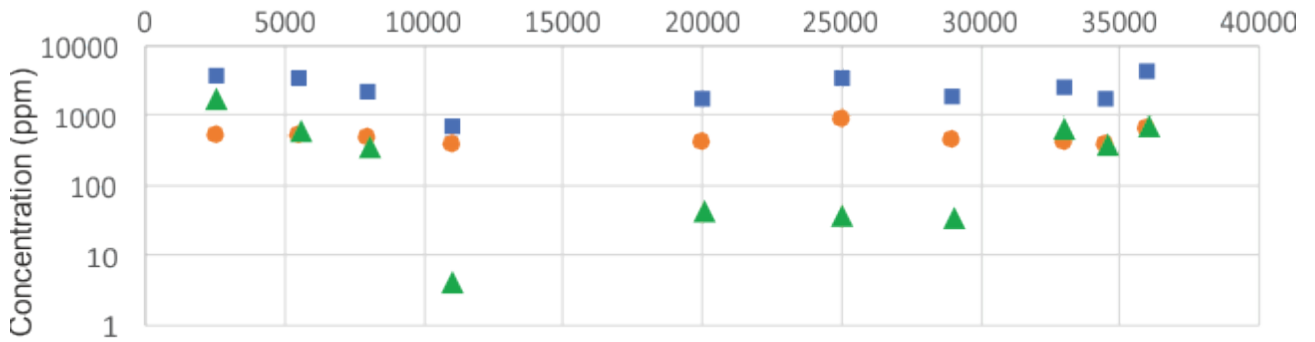
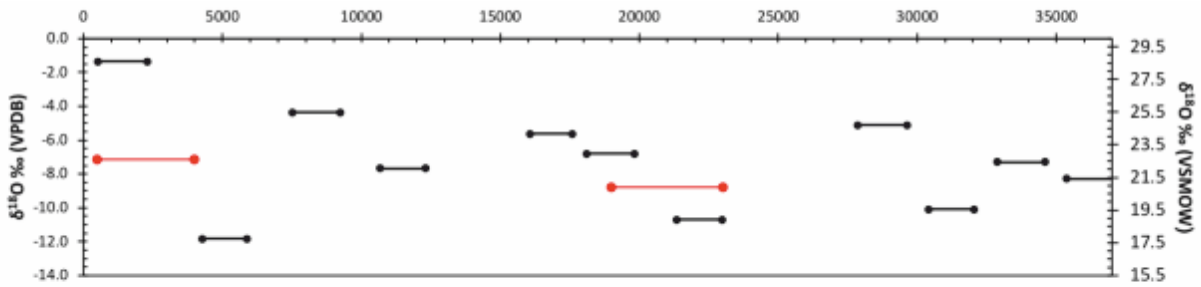
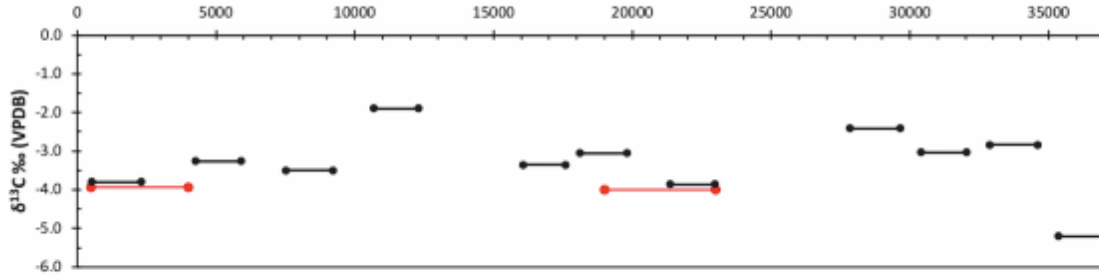
Figure SI-2.

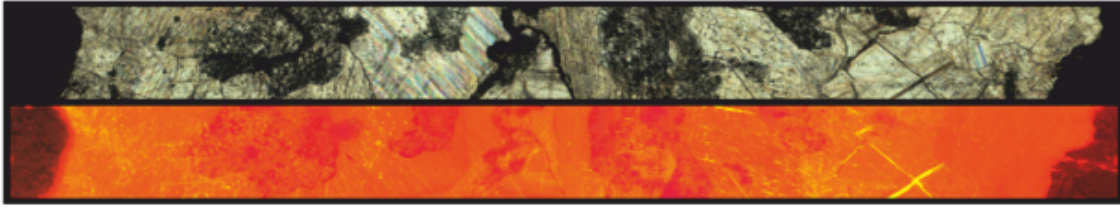
Vein cross sections for samples JV17-1, JV17-2 and JV17-12. Panels from top to bottom: stitched plane polarised light (upper) and cathodoluminescence (lower) photomicrographs; C isotope values; O isotope values; Mn (blue squares), Fe (orange circles) and Σ REE (green triangles); La/Gd (red squares) and Gd/Lu (beige diamonds) ratios; Ce (blue triangles) and Eu (purple circles) anomalies.

JV17-1

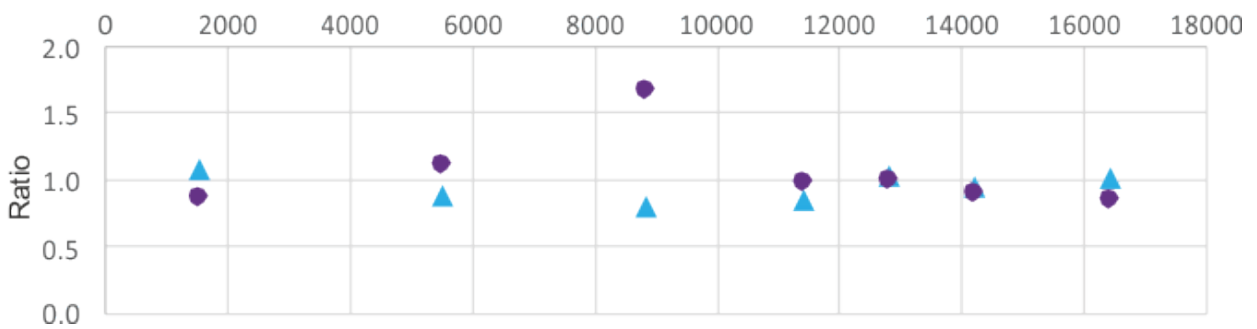
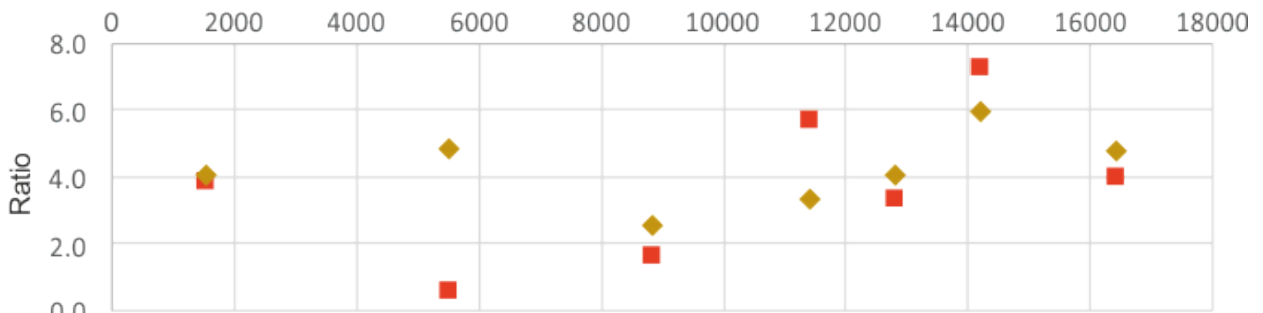
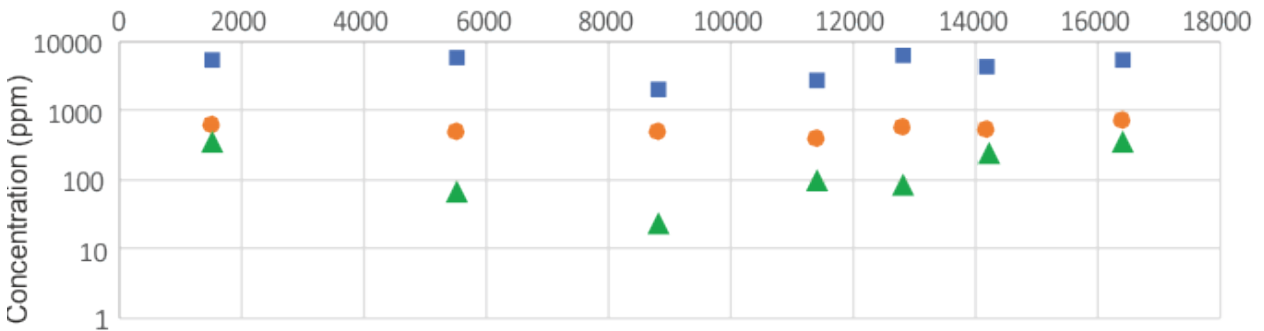
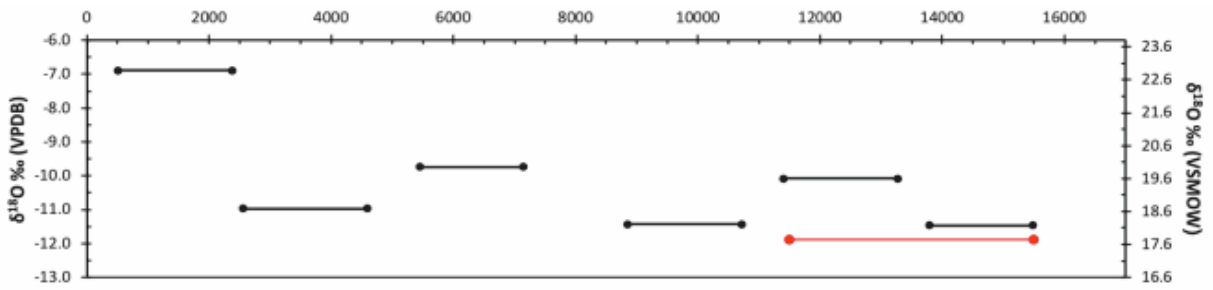
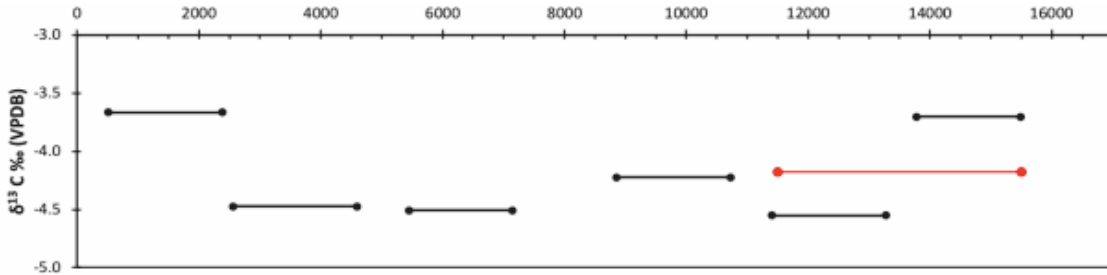


Distance (μm)





Distance (μm)



JV17-12

