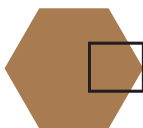
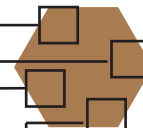


Sampling for cassiterite high-precision ID-TIMS date "internal isochron" from single parent fragment



Sampling to test spatial variation of U-Pb isotope systematics by ID-TIMS e.g. reference material characterisation



Potential pre-ID-TIMS U-Pb petrogenetic characterisation

Vein petrography

BSE + CL imaging

LA-ICPMS
Trace elements
and mapping

Oxygen isotopes

Fluid inclusions
(wafer sample)

Mineral inclusion
analyses

Microbeam U-Pb
screening/mapping

Crush + homogenise cassiterite (< 20–50 μm)
using agate pestle and mortar under acetone to
expose inclusions

Transfer and rinse (H_2O)

Leach stage 1
e.g. 120 °C hotplate overnight aqua regia
Targeting removal of sulfides, phosphates, oxides

Rinsing (H_2O or 4M HNO_3)

Leach stage 2
e.g. 120 °C hotplate overnight 29M HF +trace HNO_3
Targeting removal of silicates and other residues

Rinsing (H_2O or 4M HNO_3)

Subsample amount required per aliquot/analysis
depending on age, blank, U conc, decomposition rate
e.g. 0.1 mg to 1 mg



Transfer to capsule and rinse (4M HNO_3 + 1M HBr)
Isotopic tracer addition to microcapsule

Decomposition in
> 40x excess 9M HBr
200–220 °C HP vessel
(time is mass, sample
and grain size dependent)

Chloride conversion

Column chemistry
(HCl-based AG1x8)

Pb elution

U elution

Column chemistry
(HCl- HNO_3 AG1x8)
U clean-up
Fe removal

TIMS analyses