

Table S5. Analytical setup for LA-ICP-MS zircon analysis*

Laser Ablation System	
Make, Model, Type	Teledyne Photon Machines, Iridia, Excimer Laser
Ablation cell	Cobalt cell
Laser wavelength	193 nm
Pulse width	< 4 ns
Fluence	3-4 J/cm ²
Repetition rate	10 Hz
Ablation duration	37 s
Ablation pit depth/ ablation rate	~0.1µm/pulse equals 37 µm pit depth measured using SEM
Spot diameter	85–110 µm (6154), 35 µm (5690)
Sampling mode/ pattern	static
Carrier gas	He in the cell, Ar sampling and cooling gas
Cell carrier gas flow	0.35 l min ⁻¹ for MFC1, 0.4 l min ⁻¹ for MFC2
ICP-MS Instrument	
Make, Model, Type	ThermoFisher Element XR Single Collector ICP-MS
Sample introduction	Ablation aerosol
RF power	1250 W
Sample, auxiliary, and cooling gas flow	0.6 l min ⁻¹ /0.8 l min ⁻¹ / 16 l min ⁻¹
Detection system	SEM
Masses measured	202, 204, 206, 207, 238
Settling time	1 ms/amu
Sample time	40 ms (202, 204, 207) 10 ms (206), 4 ms (238)
Sweep time	160 ms (202, 204, 207) 40 ms (206), 10 ms (238)
Integration time	0.56 s
Number of runs	91
Background time	12 s
Ablation time	37 s
Sensitivity as useful yield	~0.3% U
SEM Deadtime	24 ns
Data Processing	
Gas blank	12 s on-peak zero subtracted
Calibration strategy	GJ1 as primary reference material, 91500 to precision and accuracy

*following guidelines of Horstwood *et al.* (2016) Community-derived standards for LA-ICP-MS U-(Th-)Pb geochronology – uncertainty propagation, age interpretation and data reporting. *Geostandards and Geoanalytical Research* **40**, 311–332. doi:10.1111/j.1751-908X.2016.00379.x