Table 1. Operating conditions for the LA-ICP-MS equipment

	U-Pb apatite analyses
Laboratory & Sample Preparation	
Laboratory name	Géosciences Rennes, UMR CNRS 6118, Rennes, France
Sample type/mineral	Magmatic apatite
Sample preparation	Conventional mineral separation, 1 inch resin mount, 1μm polish to finish
Imaging	CL: RELION CL instrument, Olympus Microscope BX51WI, Leica Color Camera DFC 420C
Laser ablation system	
Make, Model & type	ESI NWR193UC, Excimer
Ablation cell	ESI NWR TwoVol2
Laser wavelength	193 nm
Pulse width	< 5 ns
Fluence	6.5 J/cm-2
Repetition rate	5 Hz
Spot size	50 μm (round spot) or 70x30 μm (rotational XY shutter)
Sampling mode / pattern	Single spot
Carrier gas	100% He, Ar make-up gas and N2 (3 ml/mn) combined using in-house smoothing device
Background collection	20 seconds
Ablation duration	60 seconds
Wash-out delay	15 seconds
Cell carrier gas flow (He)	0.75 l/min
ICP-MS Instrument	
Make, Model & type	Agilent 7700x, Q-ICP-MS
Sample introduction	Via conventional tubing
RF power	1350W
Sampler, skimmer cones	Ni
Extraction lenses	X type
Make-up gas flow (Ar)	0.87 l/min
Detection system	Single collector secondary electron multiplier
Data acquisition protocol	Time-resolved analysis
Scanning mode	Peak hopping, one point per peak
Detector mode	Pulse counting, dead time correction applied, and analog mode when signal intensity > ~ 10^6 cps
Masses measured	^{43}Ca, ^{204}(Hg + Pb), ^{206}Pb, ^{207}Pb, ^{208}Pb, ^{232}Th, ^{238}U
Integration time per peak	10-30 ms
Sensitivity / Efficiency	28000 cps/ppm Pb (50μm, 10Hz)
Dwell time per isotope	5-70 ms depending on the masses
Data Processing	
Gas blank	20 seconds on-peak
Calibration strategy	Madagascar apatite used as primary reference material, Durango and McClure apatites used as secondary reference material (quality control)
Reference Material info	Madagascar (Thomson et al. 2012) Durango (McDowell et al. 2005) McClure (Schoene and Bowring 2006)
Data processing package used	Iolite (Paton et al. 2010), VizualAge_UcomPbine (Chew et al. 2014)
Quality control / Validation	Durango: Weighted average ^{207}Pb corrected age = 32.22 ± 0.52 Ma (MSWD = 0.69; probability=0.93) McClure: Weighted average ^{207}Pb corrected age = 526.4 ± 3.3 Ma (MSWD = 0.57; probability = 0.98)