**Detailed analytical method**

Zircon geochronology was carried out at the Central Analytical Facility, Stellenbosch University, South Africa and followed closely the method of (Frei and Gerdes, 2009). The samples were introduced into an ESI/New Wave Research, UP213, Nd:YAG laser, fitted with a custom low volume cell, and attached to a Thermo Finnigan Element2 single collector HR-SF-ICP-MS. Laser energies were 2.5 J/cm-2 and a 10 Hz repetition rate used. Ablation spot sizes were 30 µm. The primary reference material of GJ-1 (Jackson et al., 2004) was used to monitor and correct for mass bias and correct for down-hole elemental fractionation. Quality control was assessed via the Plešovice (Sláma et al., 2008) and M127 (Mattinson, 2010; Nasdala et al., 2008) reference materials, which yielded weighted averages of 206Pb/238U age = 337 ± 4 (2SD, MSWD = 0.2) and 206Pb/238U age = 520 ± 5 (2SD, MSWD = 0.8) during the period of analysis, respectively. Common Pb was monitored and corrected for using the 204Pb method and the Stacey and Kramers (1975) composition at the projected age of the grain.

Rutile U-Pb geochronology was carried out at the Central Analytical Facility, Stellenbosch University, South Africa and followed closely the method of (Frei and Gerdes, 2009). The samples were introduced into an ASI Resolution S155, ArF Excimer Coherent CompexPro 110 with a double helix large volume cell attached to a Thermo Finnigan Element2 single collector HR-SF-ICP-MS. Laser energies were approximately 2.8 J/cm2 with a 5.5 Hz repetition rate and an ablation spot size of 43 µm was used. Primary reference material SRQ36 (Schmitt and Zack, 2012) was used to correct mass bias and laser induced fractionation. Reference material R10 (Luvizotto et al., 2009) treated as an unknown yielded a Concordia age of 1089 ± 7 (2s, MSWD = 0.31) during the period of analysis.

Apatite U-Pb geochronology was carried out at the Department of Geology, Trinity College Dublin, Ireland and at the Central Analytical Facility, Stellenbosch University. In both laboratories the method of Chew et al. (2014) was closely followed. Samples 7324/10-1 2653.7 and 7228/7-1A, 2062.1 were analysed at Dublin, where they were introduced into a Photon Machines Analyte Excite 193nm Excimer UV-laser, fitted with a 2 volume Helex cell, which was in turn attached to a Thermo Scientific iCAP Qs ICP-MS. Laser energies were approximately 3.31 J/cm2 and a repetition rate of 4 Hz was employed. The remainder of the samples were analysed at Stellenbosch, where they were introduced into an ASI Resolution S155, ArF Excimer Coherent CompexPro 110 with a double helix large volume cell attached to a Thermo Finnigan Element2 single collector HR-SF-ICP-MS. Laser energies were approximately 2.8 J/cm2 with a 5.5 Hz repetition rate. The Dublin analytical session used three well-characterised apatite reference materials, which vary in ages and trace element geochemistry were used, along with NIST 612 glass, to monitor mass bias and correct for down-hole elemental fractionation during ablation. The primary material was Madagascar apatite (Thomson et al., 2012), with secondary quality control reference materials of McClure Mountain syenite apatite (Chew and Donelick, 2012) and Durango apatite (McDowell et al., 2005). The McClure Mountain syenite and Durango apatites during the period of analysis yielded 517.3 ± 4.3 Ma (± 2SD) and 32.13 ± 0.82 Ma (± 2SD) ages, respectively. The Stellenbosch procedure used a single secondary reference apatite, which was Durango and yielded an age of 31.9 ± 2.8 Ma (± 2SD). Common Pb correction followed the 207Pb method outlined by Chew et al. (2011), using iterative age estimates and the Stacey and Kramers (1975) model.

Pb isotopic analyses of K feldspars were carried out at the National Centre for Isotope Geochemistry, School of Geological Sciences, University College Dublin and closely followed the procedure outlined by Tyrrell et al. (2006) and Flowerdew et al. (2012). Polished sections that were imaged prior to analysis, were introduced into New Wave 193 nm Excimer laser coupled with a Thermo Scientific Neptune multicollector ICP‐MS. Ablations were performed as line rasters with the laser at spot size of either 75 µm or 100 µm, a 20 Hz pulse rate and laser energy adjusted so as to produce a fluence of between 5 and 6 J/cm3. Standard‐sample bracketing was used to monitor Tl based fractionation, with NIST 612 used as the standard. NIST 612 and the well characterised Shap granite feldspar (Tyrrell et al., 2006) were run as unknowns as part of the sequence in order to further verify the data reduction procedure and these yielded 206Pb/204Pb 207Pb/204Pb and 208Pb/204Pb values with 2SD uncertainties of 17.081 ± 0.007, 15.467 ± 0.013, 36.896 ± 0.027 and 18.233 ± 0.012, 15.574 ± 0.016 and 38.057 ± 0.037, respectively.

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