**Supplementary material 2**

**Zircon U–Pb LA–ICP–MS methodology**

Samples were crushed and milled to <300 μm and zircons were extracted using conventional magnetic and density separation methods. Inclusion-free zircons were handpicked for U–Pb by laser-ablation inductively coupled plasma mass spectrometry (LA–ICP–MS) analyses. LA–ICP–MS analyses were performed at the Laboratorio de Estudios Isotópicos (LEI), Centro de Geociencias, Universidad Nacional Autónoma de México (Juriquilla, Mexico), using a Resonetics “Resolution M50” 193 nm excimer laser Workstation coupled with a Thermo Xii Series quadrupole mass spectrometer. The analytical procedure is described in Solari *et al.* (2010). Data reduction was performed offline following the procedure reported by Solari & Tanner (2011). Zircon grains with errors >10% and high discordance were disregarded from the weighted mean. Age plots were made using IsoplotR (Vermeesch 2018). All errors are reported at the 2σ-level (unless stated otherwise).

**References**

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