

## Supplementary data

**Table S1** Raman spectra ( $\nu_3$ ) for Isochronally (6 h) annealed sample SL-3.

**Table S2** Raman spectra ( $\nu_3$ ) for Isothermally (850°C) annealed sample SL-2.

**Table S3** Raman spectra ( $\nu_3$ ) for unannealed and annealed (1400°C) Plešovice and Qinghu zircons.

**Table S4** Trace element concentrations by LA-ICP-MS for unannealed and annealed Plešovice and  
Qinghu zircons.