

## **SUPPLEMENT**

### **Primary and Secondary Reference Material LA-ICPMS and CA-LA-ICPMS Data**

This section consists of one-page summaries (Figs. S1-S13) for each primary and secondary reference material analyzed in this study. The summaries include rank order plots of the weighted means for each run in both the treated and untreated aliquots. Concordia diagrams show all runs for treated and untreated aliquots. Finally, each one-page summary includes example CL images for comparison of treated and untreated aliquots.

All raw data for concordant and discordant U-Pb zircon geochronology is included in Tables S1-S13 in this section.