Calcite TLM and LSJ07: two natural reference materials for micro-beam U-Pb geochronology and C, O isotope ratio measurements

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U-Pb geochronology of calcite using laser ablation-inductively coupled plasma-mass spectrometry (LA-ICP-MS) is an emerging method, with potential applications to a vast array of geological issues. Accurate LA-ICP-MS calcite U-Pb dating requires matrix-matched RMs for the correction of instrumental mass bias of Pb/U ratios. Several materials are currently being used as RMs, including WC-1, Duff Brown Tank, ASH-15, JT, and AHX-1A. In this study, we will give a brief introduction of LA-ICP-MS lab at IGGCAS for carbonate U-Pb dating. Meanwhile we further characterized two calcite reference materials for micro-beam U-Pb geochronology and and C, O isotope ratio measurements. LA-ICP-MS multiple spot analyses (> 400) at different regions of materials reveal that calcite TLM and LSJ07 are homogeneous for the U-Pb age with 220.72 +/-0.98 Ma and 26.54+/-0.41 Ma respectively. SIMS multiple spot analyses (> 100) reveals calcite TLM is homogeneous for the O isotope ratio at mm special resolution. MAT 253 gives a bulk result of δ¹⁸O =-14.20 ‰. LA-MC-ICP-MS multiple spot analyses (> 200) reveals calcite TLM and LSJ07 are homogeneous for the C and O isotope ratio at mm special resolution. MAT 253 gives bulk results of δ¹³C =-1.53 ‰ andδ¹³C =-0.33 ‰ for TLM and LSJ07 respectively. These two materials represent a useful addition to the currently distributed WC-1, Duff Brown Tank, ASH-15, JT, and AHX-1A for micro-analytical techniques of U-Pb geochronology and C, O isotope ratio measurements.