Lacorne Pluton, Québec: a suite of Archean standards for LA-ICP-MS measurements.

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Appropriate standardization is the cornerstone of laser ablation U-Pb geochronology technique. There is currently very few available archean zircon standards for laser ablation U-Pb (e.g. Wall et al. 2016). Radiation damage of a grain being controled by both U content and exposure time (i.e. age), it is needed to have several standards -primary and secondary- to monitor the quality of a produced dataset. During the 2015 Goldschmidt in Prague, we presented preliminary TIMS and laser ablation U-Pb ages for zircon grains obtained from a homogeneous unit in the quartz monzodiorite Lacorne Pluton from Abitibi, Canada, and used it as a primary standard in LA-ICP-MS measurements of natural samples with known ages (from TIMS measurements). These zircon grains produce laser ablation ages comparable to the TIMS ones for many samples, indicative of a similar interaction with the laser beam (ablation depth; c.f. Marillo-Sialler et al., 2014), and suggesting it could be an excellent candidate as a zircon primary and/or secondary standard. Since then, a large amount of outcrop rocks at Lacorne have been sampled and processed in order to yield grains of uranium bearing minerals (zircon and titanite were retrived in significant quantities).

We present a more robust database for the zircon grains from Lacorne, for U-Pb and trace elements, including REE patterns, along with titanite grains U-Pb systematics from both TIMS and LA-ICP-MS measurements. The REE patterns of zircon shows HREE enrichment, positive anomaly in Ce, and light Eu depletion. Zoning patterns are typical of magmatic origin as seen by CL-SEM. Confocal microscopy measurements of the ablation pit depth will also be presented to quantitatively compare the Lacorne grains response to ablation with the widely used zircon 91500 (Widenbeck et al, 1995), along with natural samples from Abitibi. Titatium contents of accessory minerals will also be provided to help constrain the pressure and depth settings at time of cristalisation (c.f. Baldwin et al. 2007).