

## **Development of reference materials for *in situ* Rb-Sr dating of K-feldspars by LA-MC-ICP-MS/MS**

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The advent of commercial tandem mass spectrometry (MS/MS) has brought about the development of *in situ* Rb-Sr dating of K-bearing minerals. The addition of pre-cell mass filtering and collision cell technology to multicollector mass spectrometry allows for high precision Sr isotope ratio measurements, thus enabling *in situ* Rb-Sr geochronology of feldspars. Feldspars are common minerals in Earth's crust and have the potential to record igneous and metamorphic processes not only in Earth samples but also in feldspar-bearing Martian meteorites. Critical to applying this technique more broadly is the development of primary reference materials to correct for instrumental mass bias and drift, and secondary reference materials of known age for quality control/quality assurance. In this project two avenues are being pursued: first, a series of glasses doped with a wide range of Rb/Sr ratios are being produced for use as primary reference materials. Second, we propose a suite of K-feldspars as potentially suitable secondary reference materials for Rb-Sr dating. These K-feldspars are from rocks of a variety of ages: Ghost Lake Batholith, Ontario, Canada (2654 Ma); Harney Peak Granite, South Dakota, USA (1715 Ma); Silver Plume granite, Colorado, USA (1447 Ma);  $\mu$ -ksp (Neoproterozoic, undisclosed locality); and Shap Granite, Cumbria, UK (405 Ma). The spread in  $^{87}\text{Rb}/^{86}\text{Sr}$  values of these samples, which is critical for sufficient determination of isochron dates, ranges from 0-4.5 (Silver Plume), 0-25 (Harney Peak), 0-12 (Ghost Lake), and 14-1200 ( $\mu$ -ksp).