Nano-powder tablets of mineral standards as matrix-matched reference materials for Rb-Sr dating

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Currently there is no established homogeneous matrix-matched reference material for Rb-Sr dating. As of now the K-feldspar NBS SRM607 is the only mineral-based material used as a standard for isotopic determinations of Rb/Sr ratios and Sr isotopes. However Nebel & Mezger (2006) demonstrated that the NBS SRM607 standard is heterogeneous with respect to Rb/Sr ratios. To circumvent this problem they proposed to plot Rb/Sr ratios and Sr isotopes on an Rb-Sr model isochron.

As an alternative approach to overcome inherent heterogeneities of mineral standards, we are using the method described by Garbe-Schönberg & Müller (2014) to produce several nano-powder tablets of several widely available mineral standards.

Compared to NBS SRM607 the Mica-Fe and Mica-Mg reference materials are available from various suppliers for more affordable prices. The Rb/Sr ratio and Sr isotopic composition of Mica-Fe and Mica-Mg have previously been determined by Govindaraju (1979), however we will re-analyse these as nano-powders by MC-ICP-MS with the method described in Nebel & Mezger (2006).

One long-term motivation is recent advancements in LA-ICP-MS/MS enabling *in situ* Rb-Sr dating by reaction cell online chemical separation as outlined by Zack (2015, this conference). The nano-powder tablets we will produce have the advantage of being well suited for this novel technique.

References:

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