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The exhumation of Crd+Grt+Bt bearing migmatites of the Pelhrimov Complex, situated in the North-Eastern segment of the Moldanubian batholith (Czech Republic) lead to the production of S-type granitic magma between ∼329 Ma and ∼327 Ma. In Vanov, the source paragneisses as well as resulting migmatites and granites are perfectly exposed, allowing to observe direct link between the source and granites. The partial melting process, which produced metatexites to diatexites that feed into granitic melt pods, can be studied in detail.
Monazite grains were sampled from rock varieties representing different stages of partial melting, ranging from the stromatitic migmatite and diatexite to dirty granites, Crd-Leucogranites and the Bt-granite end-member. Backscatter images of those mnz grains reveal patchy zoning in most cases and rarely some oscillatory zoning indicating relatively simple growth history. No correlation can be established between the mnz shape or zoning pattern and the rock type.
U-Pb geochronology applying the ID-TIMS technique to entire single monazite grains ranging from 80 to 200 microns in size were carried out to determine the crystallization ages of these monazite grains, and to constrain the timing of the different increments of partial melting. Each date integrates a presumed periods of protracted and/or multi-episodic growth.
The first, preliminary U-Pb dates on monazite range between 326.71 $\pm$ 0.17 and 328.20 $\pm$ 0.17 Ma and point to a minimum <2 Ma duration for the entire partial melting process.
Linking the monazite ages to particular parts of the P-T path of the studied rock calculated using thermodynamic modeling will provide a refined estimate of the P-T-t path of these rocks.
Such precise estimates for partial melting has never been obtained for these rocks. Moreover, combining these dates with chemical information from dated monazite, and with the petrological context will offer new insights on the formation of granites in general including information on melt composition evolution as well as amount, timing and length of different partial melting events.