Age of the late stage magmatic phases of the Ahvenisto rapakivi granite batholith

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The ~1640 Ma Ahvenisto AMCG complex in southeastern Finland includes a granite batholith with diverse rapakivi granites from hornblende-biotite granite to more evolved biotite granites and topaz granites (Eden, 1991, Alviola et al., 1999). According to the previous U-Pb ID-TIMS dating on zircon and baddeleyite the crystallization of the complex took place during a relatively short period of time from 1629 to 1644 Ma, but the most evolved phase, topaz granite, was not dated (Heinonen et. al., 2010). We have dated monazites from drill core samples from the most differentiated magmatic body of the rapakivi granite batholith i.e. biotite and topaz granites by LA-SC-HR-ICPMS. The preliminary age data indicate two distinct ages; ~1600 Ma for the topaz granites and ~1630 Ma for the biotite granites, suggesting that the crystallization of the complex has took longer than previously anticipated.

Monazites are characterized by a high level of common Pb, which is always challenging for the U-Pb technique. In situ measurements of Pb isotopes from co-genetic K-feldspars will be performed to improve the common Pb correction.

References:

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