A-type granites and AMCG suites; An isotopic study from SE Finland

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Rapakivi granites, a genuine A-type, in the *locus classicus* region of SE Finland are, at the current erosion level, associated with minor volumes of more mafic rocks. These are best exposed in the 1.64-Ga, 350-km^2 Ahvenisto complex on the northern flank of the Wiborg batholith. About 70% of the complex comprises silicic rocks (reduced biotite ± hornblende granites), 25% is gabbro-anorthositic rocks (leucogabbronorite, some olivine-bearing gabbroic rocks, rare anorthosite), and 5% intermediate monzodioritic rocks (ferrodiorite, jotunite). The silicic rocks usually cut the monzodioritic rocks and the silicic and monzodioritic rocks always cut the gabbroic rocks; anorthosite is found as rafts in the gabbroic rocks. No significant difference is, however, observed in U-Pb mineral ages (Alviola et al., 1999).

The radiogenic isotope composition (whole-rock Nd-Sr, feldspar Pb) of the rock types of the Ahvenisto complex is astonishingly uniform in view of the large lithologic variation observed and the varying sources (continental crust, mantle) implied. For example, initial ε_{Nd} values show ranges of +0.5 to -0.9 (gabbroic rocks), -0.9 to -1 (anorthosite), -0.3 to -1.1 (monzodiorite), and -0.1 to -2.2 (granite), whereas the S&K μ_2 values are ~9.65 for the gabbroic and monzodioritic rocks and more varying (9.65-9.79) for granite. Sr_i is 0.7036 ± 0.0002 (1σ) for the gabbroic rocks, 0.7037-0.7041 for anorthosite, and 0.7037 ± 0.0003 for the monzodioritic rocks. Our new, preliminary oxygen (laser fluorination from zircon) isotope data differentiate the mafic and silicic rocks of the complex more efficiently. The $\delta^{18}O$ value for a biotite-hornblende granite (8.09) is clearly higher than that of a leucogabbronorite (7.15) and a monzodiorite (7.04). This points to the presence of a marked sedimentary source component in the silicic rocks of the complex.

Reference

Alviola R., et al. (1999), *Precambrian Res*. **95**, 89-107.

Geochronology of a rare alkaline magmatism: The blue sodalite-syenite ore (NE Brazil)

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The South Bahia Alkaline Province (PASEBA) is composed by an association of four alkaline batholiths and several stocks, predominantly composed by nepheline-syenites and having sodalite-syenites as subordinate facies. These rocks intrude Archaean to Paleoproterozoic granulitic-migmatitic terrains.

In this work, are present the results of a systematic geochronological investigation at these sodalite-syenite ocurrences by U-Pb (titanite) and Pb/Pb (zircon) techniques. The data were obtained at the Laboratory of Isotope Geology of the Federal University of Pará (Pará-Iso).

The sodalite-syenite ore occurs as facies of the batholiths and stocks. It has irregular shape and always cover area with less than 2 km^2. It has an extremely variation in the granulation (fine phaneritic to pegamatitic) and occurs associated with the magmatic zircon (light brown, up to 2 cm) and titanite (brown to light brown, transparent).

Single zircon Pb-Pb evaporation data give to sodalite-syenite ore ages of 696 ± 3 Ma (Floresta Azul Complex – northeast) and 720 ± 9 Ma (Itarantim Massif – south). The titanites from Itajú do Colônia Stock (central part of SBAP) define an upper concordia intercept at 732 ± 8 Ma.

These results show that the crystallization age of the sodalite-syenite ore (696 – 732 Ma) is situated in the range of other magmatic ages (739 – 676 Ma) obtained for alkaline bayholitis from PASEBA. This data support the existtnce of a rift system in the south part of São Francisco Craton during the Rodinia break-down.

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