Ar-Ar and U-Pb isotopic ages of Early Caledonian granulites from the Svyatoy Nos Peninsula (Transbaikalia)

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Metamorphic rocks of Svyatoy Nos Peninsula (Transbaikalia) are basic granulites, graphitic marbles, diopside plagioschists and quartzites. The P-T metamorphic conditions are estimated to be 815-860°C and 7.9 to 8.3 kbar. The granulites are intruded by abundant veins of syntectonic granites and granitic pegmatites attributing to Barguzin Complex of the Angara-Vitim batholith (280-298 Ma) [1]. The U-Pb zircon dating of single grains indicates age of granulite metamorphism at 495 ± 5 Ma.

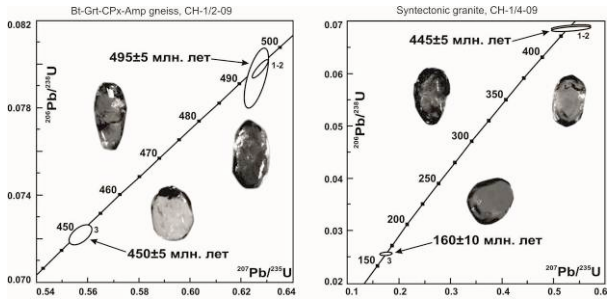

Figure: U-Pb dating of single zircon grains from Svyatoy Nos Peninsula granulites.

Syntectonic granosyenite-granites connecting with intense strike-slip deformations gave ages of 450 ± 5 and 445 ± 5 Ma. Ar-Ar ages on amphibole (256 - 245 Ma) probably date a thermal effect from the Angara-Vitim Batholith.

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[1] Cygankov et al. (2007), Russian Geology and Geophysics **48**, 156-180.

Multiphase inclusions with kokchetavite and K-cymrite in UHP calc-silicate rocks from Kokchetav massif

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Ultrahigh pressure (UHP) rocks of the Kokchetav massif are of particular interest as they were exhumed from at least 120 km depth [1] and experienced peak metamorphic conditions of approximately T = 1000-1100 °C and P = 6-7 GPa [2].

Here we present findings of K-cymrite ($KAlSi_3O_8 \cdot H_2O$) and kokchetavite ($KAlSi_3O_8$) in association with muscovite/phengite, lollingite, calcite and α-cristobalite in multiphase mineral inclusions in ultrapottasic clinopyroxene (K-Cpx) porphyroblasts of calc-silicate rocks (Kokchetav massif, Northern Kazakhstan). These inclusions were interpreted to be melt at peak metamorphic conditions [3]. Findings of K-cymrite and kokchetavite in polyphase inclusion along with experimental data on K-cymrite calcination [4] proves model of kokchetavite formation through the dehydration of K-cymrite. Presence of K-cymrite in multiphase inclusions in K-Cpx porphyroblasts testifies for high K_2O-content which should be nearly equimolar to H_2O-content in melt [5]. Korsakov *et al*. [6] supposed that gneisses underwent melting to form K_2O-rich melt which migration and further reaction with the carbonate interlayers caused the formation of the calc-silicate rocks with K-Cpx. Neither kokchetavite, nor K-cymrite were reported in gneisses. This fact could imply that melt in gneisses should contain less amount of K_2O, than that in calc-silicate rocks. Therefore we assume that K-rich melt was formed during the prograde metamorphic stage at low melting degrees and than migrated to calc-silicate rocks protholith to form K-Cpx. During peak metamorphic conditions gneisses underwent extent melting which decreased K_2O-content in melt.

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