$^{40}Ar/^{39}Ar$ dating of muscovite from the Maofeng Granite, N-Guangdong Province, China

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The Maofeng Granite, located in the Guidong granite composite, N-Guangdong Province, China, has been paid much attention to by geoscientists because of its hosting several big uranium deposits. Two muscovite concentrates have been prepared from representative samples collected from the outcrop of the granite body. They were analysed using incremental-release $^{40}Ar/^{39}Ar$ method. The $^{40}Ar/^{39}Ar$ apparent ages of the two samples are shown in Fig. 1.

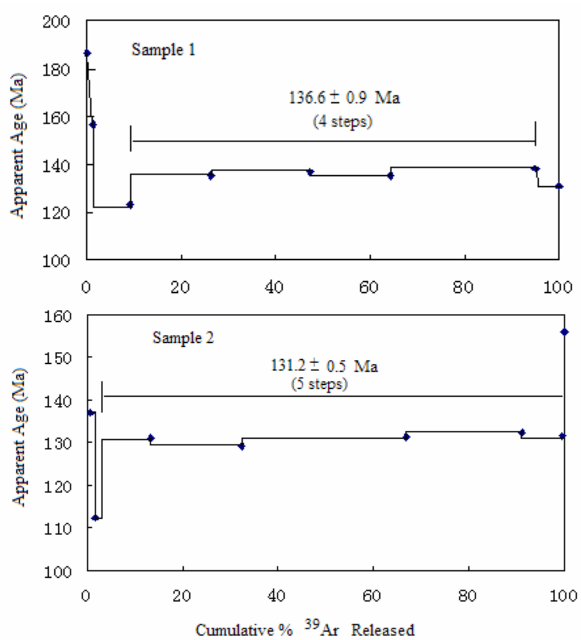

Figure 1. $^{40}Ar/^{39}Ar$ apparent ages of muscovite concentrates from the Maofeng Granite. Plateau ages are listed on each spectrum.

The plateau ages ranging from 131.2±0.5 to 136±0.9 Ma are much different from the single grain ziron U-Pb ages varying from 207.6±3.2 to 219.6±0.9 Ma of the Maofeng Granite reported by previous researchers. In the area, one of the major uranium mineralization periods was dated back to 122 to 138 Ma ago. These evidences suggest that the muscovite was formed from the hydrothermal fluid which resulted in uranium mineralization, and that the plateau ages did not reflect the age of the Maofeng granite itself but the age of the U ore-forming hydrothermal activity.

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Oxygen isotopic zonality at the Iultin Sn-W Deposit (Chukotka, North-East of Russia)

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The oxygen isotope composition of host rocks and main vein minerals was studied at the large well known Sn-W Iultin deposit with application to the role of mixing fluids of different origins in the deposition of Sn-W ores in granite-related hydrothermal systems.

The deposit is located in the exo- and endocontact of leucogranite stock (K_2) and is formed by the seria of the proximate quartz veins in hornfelsized sandstone-schist rocks ($T_{1\text{-}2}$). The veins and greisens are largely composed of the productive mineral assemblage (quartz, muscovite, cassiterite, wolframite, arsenopyrite, subordinate beryl, scheelite), formed from sodium chloride boiling solutions enriched in CO_2 and CH_4 at T 270-350ºC, P 0,5-1,0 kbar as it followed from fluid inclusion data. The postore sulfide and fluorite-carbonate assemblages are poorly developed.

The oxygen isotope composition of the rocks was examined in: a) metamorphosed sedimentary rocks of outer part of hydrothermal system, b) the contact part of the leucogranite cupola, c) the altered wall rocks in the central part of the deposit across the large ore body (62/50) and d) the wall rocks of the veins (7,10), poor in Sn-W ores. It was found that large (hundred meters) low-^{18}O zones have been formed in the central part of the Iultin hydrothermal system. The $\delta^{18}O$ values decreased monotonously from the initial 12‰ (1km from the contact) to 3-5‰ at the contact with granite. Substantial ^{18}O decrease in the contact zone, formed by greisenized granites, is the result of active movement of hydrothermal solutions and is explained by higher permeability in comparison with metamorphosed sedimentary rocks (Spasennykh *et al.*, 2002). During the development of vein ore bodies the wall rocks were altered insignificantly in oxygen isotope composition. The high $\delta^{18}O$ values of minerals of productive association bore witness to magmatogenic source of the fluids. The notable depletion of the wall rocks in ^{18}O took place during the final stage, when meteoric waters dominated in the hydrothermal system. That time no significant ascending fluid flows were focused within the veins. The initial picture of oxygen isotope zonality, connected with ore deposition, had been wiped away by active interaction of exogenic waters with host rocks.

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