Genetical types of sericitolites of the Pre-Polar Urals

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We refer metamorphic and vein rocks with the contents of sericitolites of more than 50% (rarer muscovite) and consequently highly potassium-rich (no less than 5% K_2O) to sericitolites. Such rocks were studied by us at the Peripolar Urals in the area of the European largest vein quartz and rock crystal deposit Zhelannoe. Two completely different morphotypes, stratiform and vein, were investigated. The vein sericitolites are undoubtedly hydrothermal formations – this is supported by their morphology, close association to quartz veins and location of some of them directly in crystal-bearing nests. These rocks are products of two-stage crystallization of hydrothermal silica-alkali solutions, which also became sources for quartz vein formation. Two generations of minerals are clearly traced: one of them is synchronous to the first (vein) stage of sericitolite formation (tourmaline, zircon, rutile, hematite, monazite, muscovite), second generation minerals (tourmaline-2, zircon-2, monazite-2, xenotime, clynozoisite, fuchsite, gold) formed during the formation of crystal-bearing nests (nest stage). The stratiform sericitolites have quite a different genesis. Their association in the section with quartz-pyrophyllite, phengite-chloritoid-pyrophyllite rare earth shales and diasporites, which corresponds to successive range of rhyolite change, which allow treating them as a part of metasomatic column – thermal endogenous, or primary low temperature exogenous, which was related to old crust of weathering on rhyolites. Still we propose that the character of interrelation in profiles is better conformed to the model of fault metasomatosis, than to the model of the crust of weathering on rhyolites.

Ocean Sr-budget from paired $\delta^{88/86}$Sr and ^{87}Sr/^{86}Sr*-ratios

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The degree of natural ^{88}Sr/^{86}Sr- and ^{87}Sr/^{86}Sr*-isotope fractionation in geological samples using TIMS can be determined with a mixed ^{87}Sr-^{84}Sr double spike. This allows to correct the ^{88}Sr/^{86}Sr- and ^{87}Sr/^{86}Sr*-isotope-ratios for mass dependent fractionation. Measurements of the seawater standard IAPSO ($\delta^{88/86}$Sr=0.386(5)‰, ^{87}Sr/^{86}Sr = 0.709312(9) $2\sigma_{mean}$, n=10) and the JCp-1coral standard ($\delta^{88/86}$Sr= 0.197(8)‰, ^{87}Sr/^{86}Sr=0.709237(2)) are in accordance with earlier publications (1,2). A further advantage of this technique is that the Sr isotope ratios can be determined with higher precision than with the classical technique normalizing ^{87}Sr/^{86}Sr values to a fix ^{88}Sr/^{86}Sr ratio of 8.375209 ($\delta^{88/86}$Sr=0). The new possibility of simultaneous determination of paired ^{88}Sr/^{86}Sr- ^{87}Sr/^{86}Sr*–ratios allow a two-dimensional view of the Sr isotope system in three-isotope diagrams which allow to better constrain the present and past Sr budget of the ocean. In order to constrain the present Sr budget of the ocean we measured $\delta^{88/86}$Sr and ^{87}Sr/^{86}Sr*-ratios of a set of river water samples and hydrothermal fluids being the major Sr sources. The Sr isotope values of the JCp-1 coral standard were taken to represent the $CaCO_3$ flux to the ocean floor being the major sink. Model calculation showed that the modern ocean is not in steady state rather the Sr sources supply roughly double the amount of Sr to the ocean then is removed by the sinks.

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