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On the nature of mantle component in isotope systems of rare-metal granites.

L.F. Syritso (1), V.S. Abushkevich (1), L.K. Levsky (2), E.V. Badanina (1)

(1) Dept. of Geochemistry, Saint-Petersburg University, Russia, (2) Institute of Precambrian Geology and Geochronology RAS, Russia (vik2211@rol.ru / Fax: +7 812 3284418)

The presence of a mantle component in Rb-Sr and Sm-Nd isotope systems of rare-metal granites (RG) is known (Pushkarev, Syritso, 1996; Kovalenko, et al., 1999). It is shown to have rather low amounts of the initial relation of strontium and, on the other hand, higher, close to zero and even slightly positive values εNd(T), not typical for the generally known crust nature of RG. The problem lays therein, how a juvenile component gets into the melt of RG, what role the interaction of mantle and crust substances play in the formation of these rocks and where this interaction occurs: the succession of a substratum and/or the subsequent infringement of isotope systems in the process of the reaction of a profound energy source. This article attempts to approach this problem on the basis of an isotope-geochemical comparison of RG with dikes and covers of highly-specialized ultrapotassium trahyrhyodacites (TRD), permanently associating with the RG (Syritso, et al., 2005). The potassium composition of these rocks' melt, established on the basis of a study of melt inclusions in quartz, contains 6,7wt% K_2O and up to 700ppm Rb. The close geochemical relationship of TRD and RG and their spatial association allows us to consider these rocks as a potential substratum for RG. However, TRD is characterized by typical crust values of εNd(T)=-6,1 in comparison with RG (εNd(T) from -1,9 to +1,4). Such a situation could arise only under conditions of an interaction of TDR and primary juvenile substances with mantle value εNd(T) (up to +8), probably, enriched K and Rb. It is just such a process that has determined the infringement of Sm-Nd and Rb-Sr systems on TRD and has led to an abnormally low value of the initial relation of strontium and to an increase in the value of εNd(T). In view of this, the calculated part of mantle components in melt could reach 10-15 %. The research was supported by the Russian Foundation for Basic Research (03-05-65293).