



Mesozoic lamprophyres of Gorny and Mongolian Altay

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The Chuya complex consists of more than 400 early Mesozoic lamprophyre dikes that occur in the vast territory in the structures of the Gorny and Mongolian Altay. Based on the irregular distribution of the dikes, various researchers have distinguished from 3 to 6 separate dike swarms or areas. Each of them is spatially connected with a specific simultaneous ore deposit. For example, in the Aktash area, there are the Aktash, Chagan-Uzun and other Sb-Hg deposits, in the territory of the South-Chuya area there are the Kalguta Mo-W and Chagan-Burgasy Ag-Pb deposits and within the Yustyd area there are the Askhatin-Gol Ni-Co-As deposit, Asgat, Ozernoe and Tolbonour Ag-Sb deposits. But the genetic link between the magmatic rocks and close in time and space ore deposits has not yet been proven.

In this work samples of lamprophyre dikes from the largest areas (Yustyd and South Chuya) were studied. The dikes are extraordinarily similar in mineralogical and chemical aspects. The greatest differences are in the isotopic characteristics of the rocks. Lamprophyres and syenites of the South-Chuya area have negative ϵ_{Nd} (~ -4) and an elevated $^{87}Sr/^{86}Sr$ (>0.711) ratio whereas lamprophyres of the Yustyd area are close to BSE ($\epsilon_{Nd} \sim 0$, $^{87}Sr/^{86}Sr = 0.705-0.707$). Using data on the composition of rock-forming minerals, study of chemical characteristics and composition of lamprophyre fluid inclusions, we propose different sources with similar geochemical characteristics and varying degrees of metasomatic mantle material provoked different isotopic composition. The resulting liquid rich in carbonates and composite fluids in conjunction with low degrees of melting generates approximately petrochemical and mineralogical similar compositions newly formed rocks.