

Petro-geochemical characteristics of melnichnaya suite rocks (Zmeinogorsky ore area, Rudny Altai)

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On the territory of Zmeinogorsky area among nizhnemelnichnaya subsuite rocks besides terrigenous sedimentary rocks there are silicic and intermediate volcanites and their tuffs. Among silicic rocks which constitute the bulk of verkhnemelnichnaya subsuite there are trachydacites, dacites and predominant rhyolites (less frequently – subalkaline rhyolites). According to type of alkalinity the rocks are sodic (intermediate), soda-potassic and sometimes potassic (intermediate-silicic) ones. In general, the rocks have rather high content of titanium, medium alumina and iron contents, low or medium calcareousness and magnesium content. Multielement spider plots show that studied volcanites are genetically related and not much differentiated by trace elements contents. The largest negative anomalies at the spider plots are those corresponding to Nb and Ta, Sr and Ti contents. There are no significant positive anomalies at the same time. Regarding the primitive mantle there are higher contents of lithophile elements like LILE (Cs, Rb, Ba, Th, U, La, Ce, Pr and Nd) and, in a lesser extent, HFSE. Comparison of microelements distribution with such geochemical standards as N-MORB, OIB, IAB reveals that studied rocks are most close to island arcs rocks. The peculiar feature of REE distribution is almost equal and rather low content of medium and heavy REE. Plots for almost all of the rocks are lower than IAB datum line according to REE content. There is only much more of light rare earth elements (La, Ce, Pr, Nd) than medium and heavy ones. Apparently, there were mantle-crust processes combined including recycling of older metamorphic rocks, of which earth crust basement consists.

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