

THE CHARACTERISTIC FEATURES OF STRUCTURE AND METAMORPHISM OF THE PRECAMBRIAN ROCKS OF CHARAMATALOU (THE POLAR URALS)

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Charamatalou massif is a part of Precambrian basement in the Polar Urals. This massif consists of metamorphic rocks of volcanogenic-sedimentary genesis. The modern structural plan was formed in a result of north-west orientated folding. Similar orientation of magnetic anomalies is noted in a structure of this massif. On the basis of difference in rocks substance composition, in petrophysical properties, in metamorphism and in deformation we have established two structural-metamorphic complexes: the Upper Riphean and the Lower Proterozoic (?) (Lubozhenko, Pystin., 1996). Present geological data show that rocks of the lower complex were formed by two stage regional metamorphism. In the meanwhile, rocks of the upper complex were formed by one stage regional metamorphism. This conclusion follows from established regularity of a distribution of chemical elements along profile of garnet grains. We observed spasmodic increase of Mn, Ca quantity and decrease of Mg, Fe quantity in optically zonal garnets of the lower complex. These changes take place in transitional zone from central part to edge of a crystal. We interpret the internal part of the zonal garnets as a relicts formed in the first stage of metamorphism. The optical zoning among another group of the garnets from the lower complex and all the garnets from the upper complex is not displayed. These garnets are characterized by decrease of Mn quantity and the increase of Fe, Mg quantity from the central part to the edge of garnet grains. This character of elements distribution speaks that multiple regional metamorphism of the lower complex rocks (this stage of metamorphism was the first in the upper complex) proceeded under condition of temperature increase. This is a progressive metamorphism stage. The second metamorphism stage was characterized by higher pressure and lower temperature in contrast with first stage.