

RELATIONSHIPS BETWEEN BLUESCHISTS AND GARNET-OMPHACITE ROCKS IN THE MAKSYUTOV COMPLEX, SOUTH URALS

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The relationships between garnet–omphacite rocks and blueschists in the Maksyutov complex (South Urals) were investigated in detail on example of a one sample of size 19.5-11-1 cm. In this sample, transversely the contact of garnet-omphacite rock and blueschist through each 1.5 cm, the six chemical analyses of each rock were made by the XRF spectrometry method. Microprobe analyses of garnets, pyroxenes, amphiboles, phengites were performed in four thin sections cutting along the profile. The regarded example can be reduced to a case of one-dimensional diffusion at the contact of two infinite mediums, with original stepped distribution φ_0 and φ_1 . It is described by the equation $C(x,t)=(C_0+C_1)/2-((C_1-C_0)/2)\text{erf}(x-\varphi_0)/2(Dt)^{0.5}$, with the following boundary conditions: $C=\varphi_0$ at φ_0 , $t=0$; $C=C_1$ at φ_0 , $t=0$ (x – hot fix, φ_0 – position of initial boundary, D – effective diffusion coefficient). The calculations show that the initial boundary (X_0) does not coincide with the observed contact, it is displaced inside the garnet–omphacite rock approximately on 3-5 cm. This suggests that in the very beginning here there were rocks of different chemical composition. In one of them the blueschist paragenesis (Qtz+Pl+Gln+Phe+Grt+Act) was formed, the eclogite paragenesis (Qtz+Pl+Omp+Gln+Phe+Grt+Act) originated in another rock. Practically all the minerals took part in exchange of components between the rocks. Thus the distinctions in kinetic characteristics of solid phases resulted in displacement of initial boundary towards the blueschist. This leads us to the conclusion that garnet-omphacite rocks were superimposed on blueschists.