Geophysical Research Abstracts
Vol. 19, EGU2017-11766-1, 2017
EGU General Assembly 2017

Petrology of ordovician syngranitic dykes of the West Sangilen (SE Tyva)

Elena Vasyukova (1,2), Andrey Izokh (1,2), Andrey Lavrenchuk (1,2)

(1) Novosibirsk State University, Novosibirsk, Russian Federation, (2) VS Sobolev Institute of geology and mineralogy SB RAS, Novosibirsk, Russian Federation

There has been presented a characteristic of the material composition of composite and mingling dykes of Ordovician age located within Sangilen area (South-Eastern Tyva). Dykes cut rocks of metamorphic HT-LP-type complex and S and M-type granitoids. Geologic ratios of dykes with enclosing rocks, as well as isotopic characteristics of some of them evidence of formation synchronicity of dykes and enclosing granitoids. Taking into consideration these data, as well as the similarity of petrochemical and geochemical characteristics of Ordovician dykes and other geographically close large mafic massifs, we can say that in the West Sangilen territory for a long period there was a major source of mafic melts. In this study there have been considered three options for interaction of melts of contrast composition – the simultaneous intrusion of two melts of different composition in one crack; the intrusion of mafic melt in granitoid massifs of different degrees of consolidation: still having viscoplastic properties or already manifesting hard-brittle properties. Comparison of changes in the rocks, including the body morphology, the size of the interaction zone and the composition of rock-forming minerals, allowed us to offer the hypothesis of dyke complexes formation being based on models of composite dyke formation described in the literature [Huppert, Sparks, 1988, Litvinovsky et al., 1995, etc.]. The hypothesis consists of superimposition of two allopelagic foci within the same area. In its central part there has been occurred melting-out of anatectic or slightly displaced granitoids. The subsequent intrusion of mafic material has led to the fragmentation of mafic bodies within rock massif of acidic composition with a complication by repeated melting. At the periphery of the area mafic melt together with an acidic material captured on the way has intruded colder, more brittle rocks of metamorphic complex, thus forming composite dykes.