



Composition and formation of peperite-like structures from Tastau, Eastern Kazakhstan

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The study reports magma - cataclased rocks interaction in progressive developing shear zone. In some cases the magma and solid rocks form the peperite- and/or mingling-like structures. In contrast to the well-known the magma mingling and peperite formations, studied by us the peperite-like structures occur as fragmented intrusive bodies emplaced within lithified environment which has been undergone a voluminous deformation. Unusual mafic segregations have been found in low-grade sediments of Early Carboniferous in the Late Hercynian Tastau volcano-plutonic ring complex (Eastern Kazakhstan). These display small (1-70 cm), closely spaced, mainly interconnected, globular and irregular bodies enclosed in metapelites. The sedimentary rocks consist of the folded interleaved siltstone and sandstone. The sedimentary alternation is disrupted in linear zone of superimposed tectonic brecciation and cataclasis. The mafic segregations are located only in these zones. Mineralogically they mainly compose of salite, anorthite, zoisite, amphibole and quartz. In rare case were found the liquation structures: the nodules of silicate-sulfide rock within silicate-oxide one. It is important that chilled margins were preserved throughout around all of the observed mafic fragments. We believe that such kind of magma fragmentation, i.e. the magma - cataclased country rock mingling, took place at significant decreasing of matrix viscosity. Progressive stretching during a transient (catastrophic as variant) shearing was accompanied by intrusion of mafic melt. Consequently, the effective viscosity of matrix was comparable with a melt viscosity and in result was brought to development of the peperite-like structures.