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# Sill-like bodies of high-pressure ultramafic cumulates in tectonic blocks of the Pekul'ney complex (central Chukotka): their composition and inner structure

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During the last decade petrology of high-pressure ultramafic-mafic cumulates originated in the lower crust of the relatively thick lithosphere in both subduction and extensional settings became a matter of keen interest owing to development of lower crust underplating and delamination hypothesis as well as proposals of high-pressure fractionation influence on composition of evolved magmas and volcanic rocks. Peculiar rocks of the deepest complexes are garnet ultramafic and mafic rocks that occur in the Pekul'ney complex. The latter includes several tectonic blocks that we found to be constituted by sill-like layered bodies and embedded them metamorphic rocks. These country metamorphic rocks are represented by lower crustal amphibolites and crystalline schists whose pike conditions of metamorphism correspond to high-pressure epidote-amphibolite facies field (610-680oC, 9-14 kbars). All varieties of ultramafic rocks of the Pekul'ney complex belong to a single cumulative suite. Various types of ultramafic rocks regularly and repeatedly intercalate; and their primary minerals display regular correlations consistent with trends of fractional crystallization. Peculiar features of the Pekul'ney complex ultramafic rocks are early hornblende crystallization (hornblende occur in peridotites and olivine pyroxenites), garnet crystallization in a wide interval of conditions (garnet presents in pyribolites along with clinopyroxene, ceylonite and hornblende), crystallization of igneous clinozoisite in the most differentiated assemblages (along with garnet, hornblende and clinopyroxene), and lack of plagioclase crystallization indicators. Most differentiated ultramafic rocks contain clinopyroxenes with $Al2O_3$ contents up to 15 wt. %. A thickness of ultramafic sill-like bodies studied varies from 350 to 1100 meters in different blocks of the complex. An inner structure of bodies is determined by regular intercalation of regular cycles (dunites – peridotites and olivine clinopyroxenites – pyribolites) and members of irregular intercalation of dunites, peridotites and olivine pyroxenites. A thickness of individual regular cycles varies from 50 to 410 meters. Cumulative ultramafic rocks of the Pekul'ney complex crystallized from a high-magnesium water-rich mantle-derived primary melt in a wide range of temperatures at a pressure of 11-13 kbar. The complex was originated in a setting of ensialic arc. The Pekul'ney complex can be considered as a reference object for investigations of petrology, geochemistry and compositional evolution of subduction-derived mantle melts caused by high-pressure fractionation.

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