

Original melt inclusions in relic minerals from igneous high-grade metamorphosed rocks.

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It is accepted that high-grade metamorphism leads to the full recrystallization of protolith. But some petrological and mineralogical data show that metamorphic process is out of equilibrium and evidence for the preservation of relics of the protolith. Information obtained on study of fluid inclusions from minerals of high-grade rocks (pyroxene, hornblende, plagioclase) reinforce the last statement and show that melt and fluid inclusions trapped at the temperature, which exceeded the temperature of metamorphism, preserve in partly recrystallized and not recrystallized protolith relics.

Melt inclusions homogeneous at temperature 950-1250°C were found in relic minerals from basic rocks and hypersthene-bearing gneisses (metavolcanics, metagabbro, and metadiotites, Aldan Shield, Eastern Siberia, and Baltic Shield). Temperature of homogenization of melt inclusions decreases with the increase in silica content. Microprobe analyses of the orthopyroxene, which core consists a group of melt inclusions, show that the central part of mineral differs from its marginal part in particular by significant enrichment in MgO. According to accepted classification of fluid inclusions metamorphic inclusions in partly recrystallized relics correspond to the group of secondary inclusions in contrast with metamorphic minerals, where they are primary ones. It is the most characteristic feature for identification of such relics.

Obtained data may be used as a good method for determination of protolith origin.