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Studies of microstructures of deformed charnockitic rocks in Telsiai deformation zone, Lithuania

Irma Vejelyte
Vilnius University, Department of Hydrogeology and Engineering Geology, Vilnius, Lithuania (Irma.Vejelyte@gf.vu.lt)

The Telsiai Deformation Zone (TDZ), a regional scale Precambrian deformation zone in the crystalline basement of Lithuania, transects the WLGD in the E-W direction and is approximately 15-20 km wide as mirrored by a belt of gravity and magnetic lows. As indicated by petrological and geophysical data the TDZ crosscuts a 1.82 Ga charnockitic pluton in a ductile manner. In turn, the TDZ appears to have been intruded by or accommodated a 1.46 Ga granitoid intrusion, defining at least its age in-between of these two magmatic events.
The mesoanalyses and microanalyses of drillcores have been carried out on augen mylonite and ultramylonite, which were formed at upper amphibolite facies. The temperature during the deformation was 650-750 C^{o} at pressure between 3.0 and 4.7 kbar. The deformed charnockites have a prominent foliation marked mainly by feldspar, biotite, quartz, orthopyroxene, garnet and $\pm$ clinopyroxene. Porphyroclasts of plagioclase are elongated and banded. They are partly recrystallized to fine-grained polygonal aggregates as a result of high temperature deformation. In places, plagioclase has been truncated by plagioclase-rich microshears. Quartz grains are in three manners: large old grains with deeply indented boundaries and undulate extinction; medium polygonal grains and ribbons grains. Large biotite grains are locally kinked, some of them have been partly neocrystallized to much smaller new grains of biotite parallel to the foliation. Garnet crystals are elongated and oriented to the foliation. Individual grains of them in the highest strain areas have been recrystallized to many small garnet grains. Large crystals of orthopyroxene are deformed and elongated, on their sheared rims tails of fine grained orthopyroxene and clinopyroxene have been formed. The subgrain rotation, grain-boundary migration recrystallization and recovery processes predominate in all minerals. Near residual plagioclase also are visible myrmekites. They formed along those sides of the grains that face a shortening direction.
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