

English abstract

This work focuses on garnet bearing micaschist in the vicinity of the Měděnec village on the czech side of the Krušné hory Mountains (Saxothuringian Zone, Bohemian Massif). Micaschist is a part of nappe units with eclogites which reached high pressure conditions during subduction of the Saxothuringian plate beneath the Teplá-Barrandien unit and they were subsequently exhumed into the upper parts of this subduction-collisional system.

The rock-forming minerals present in micaschist are phengite, quartz and porphyroblastic garnet with inclusions of quartz, rutile, phengite, paragonite, apatite, monazite, florencite, zircon, chlorite, chloritoid, ilmenite, titanite, Co-arsenopyrite and graphite. Small amount of kyanite, retrograde chlorite and tourmaline are present in the matrix.

Detailed chemical composition of garnet was studied using compositional maps of major and trace elements. The garnet shows prograde zoning with decrease of Mn and Ca and increase of Fe and Mg from the core towards the rim. Pressure and temperature conditions of the micaschist were calculated using thermodynamic modeling in Perple_X in the system of MnNCKFMASHTO. Based on the pseudosection, the mineral assemblage with kyanite is stable at higher pressure above 18 kbar and 600 °C. The pressure-temperature path of metamorphism was constrained using isopleths of garnet in combination with isopleth of X_{Mg} of chloritoid and of silica content in phengite. It begins by formation of garnet around 10 kbar and 460 °C and reaches pressure up to 23 kbar at 610 °C for rim of garnet and matrix minerals.

Thin compositional rings of calcium, phosphorus and chromium are visible in garnet's compositional maps. They indicate rapid increase of one element and a decrease of another one. Possible explanation of these changes are discussed in the thesis.

Keywords: garnet bearing micaschist, Měděnec, eclogite facies, zonation of garnet