

## English abstract

This work focuses on high pressure atoll garnet-bearing metabasites from the central part of Krušné hory Mts. in Saxothuringian zone of Bohemian Massif. Eclogite bodies are interpreted as a part of allochthonous units, which were dragged into the high pressure conditions of subduction zone during a subduction of Saxothuringian oceanic crust under the Teplá-Barrandien Unit and subsequently they were exhumed into upper parts of subduction-collisional system.

Main mineral assemblage of eclogites consists of omphacite, garnet, quartz and amphibole which replaces grains of omphacite. Minor minerals present are rutile, ilmenite, talc and chlorite. Zircon, apatite, paragonite, pyrite, plagioclase, albite and monazite are enclosed in porphyroblasts of garnets. Grains of garnet frequently form the atoll structures, where its central part of a grain is replaced by new minerals of matrix and rim part stays preserved.

Based on compositional profiles and mapping of major and trace elements, two evolution phases of garnet were distinguished. Older garnet (I) forms mainly preserved cores of garnet and on the contrary younger garnet (II) is present on rims or also replaces garnet I in the core part of a grain. Garnet I has higher amounts of Ca and Mn but lower Mg and Fe than garnet II. Preserved grains of garnet I shows prograde zoning with decreasing Ca and Mn content from central part to the border with rim garnet II.

In the zonal grains of garnet were also measured rare earth elements and Y, especially heavy rare earth elements (Lu, Yb, Tb, Er) and Y, which are highly resistant against the diffusion and shows prograde zoning in garnet I, in which the central parts are highly enriched by these elements. Similar contents are present also in garnet II, but their enrichment is varying due to continual process of replacing garnet I and so variable influx of elements from core garnet I.

Except of garnet, there is also described zoning composition of omphacite, in which the best zoning patterns of major elements (Al, Mg, Ca, Na, Fe) are revealed in its central part of a grain. In omphacite are also well preserved zoning patterns of light rare earth elements (La, Ce, Pr, Nd, Sm and Eu).

Keywords: atoll garnet, compositional zoning, trace elements, eclogite