

Ca–Al mica margarite – its occurrences and metamorphic significance in mica schists from the Kutná Hora Crystalline Complex

Ca–Al slída margarit – její výskyt a metamorfní význam ve svorech kutnohorského krystalinika (Czech summary)

(3 text-figs.)

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Margarite, i. e. the Ca–Al brittle white mica, has been identified in the form of inclusions in garnets from mica schists of the Micaschist Zone of the Kutná Hora Crystalline Complex (Central Bohemia). In association with other mineral inclusions like chlorite, quartz, staurolite, clinozoisite and ilmenite, it represents an older metamorphic stage of a prograde evolution of the host rocks, which took place under conditions of greenschists facies transitional to lower amphibolite facies.

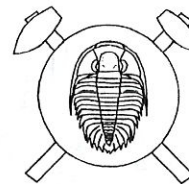
Introduction

Margarite, Ca–Al white brittle mica, is not a common mineral for Variscan rocks in the Bohemian Massif. Numerous studies (Frey 1978, Frey et al. 1982, Bucher–Nurminen et al. 1983, Cotkin et al. 1988), however, show that margarite can be relatively important rock-forming mineral, as it was proposed by Winkler (1979). In detail, the occurrences of margarite are described well in rock sequences from Central Alps (Frey et al. 1982, Bucher–Nurminen et al. 1983) as a product of Tertiary Alpine metamorphism. Most frequently margarite participates in calcareous schists (metamarls) often graphitic, in general it can be present in metapelites as well as in metabasites, anorthosites and bauxites, coexisting with a variety of minerals including calcite, quartz, plagioclase, zoisite and clinozoisite, kyanite, chloritoid, garnet, corundum, dolomite, chlorite, paragonite, muscovite and biotite.

This paper is a description of margarite from numerous minute inclusions in garnets from mica schists belonging to the Kutná Hora Crystalline Complex, as well as its coexisting mineral assemblage giving an evidence about the metamorphic history of the rocks.

Geological setting and petrology of host rocks

The margarite-bearing mica schists are important rocks of the Micaschist Zone – the lowermost unit of the Kutná Hora Crystalline Complex, Central Bohemia (Synek – Oliveriová 1992), which has tectonic contact with the underlying Varied Group of the Moldanubian Zone



(Fig. 1). The authors suppose that the Micaschist Zone is covered by relics of the Kouřim Nappe in the western part of the Kutná Hora Crystalline Complex and in the East underlies the Gföhl Unit.

The Micaschist Zone is formed by a monotonous sequence of metapelites intercalated by numerous bodies of amphibolites.

The metapelites appear in various forms due to the character of protolith as well as an intensity of their tectonometamorphic reworking. In general they have a character of mica schists with lepidoblastic textures.

The garnet-bearing mica schists show an obvious polymetamorphic character of the whole sequence. The common mica schist constituents are garnet, kyanite, staurolite, muscovite, biotite, plagioclase (oligoclase) and quartz, tourmaline, apatite, zircon, rutile and/or ilmenite as accessories. A younger sillimanite together with micas grew at foliation planes and in pressure shadows close to rotated granet. The youngest tectonic overprinting, operating in narrow strike-slip zones has resulted in alterations such as chloritization, muscovitization and sericitization.

The amphibolites are fine-grained rocks with banded structure, the greenish layers alternate with the blackish ones. The banding of amphibolites has evidently a tectonic origin. These rocks, in which the essential constituents are hornblende, plagioclase (bytownite to anorthite), diopside, Ca–scapolite, clinozoisite and/or epidote together with titanite, are remarkably rich in calcium.