dant at 334 Ma and rutiles concordant at 331 Ma probably date the HP granulite metamorphism. Cordierite-bearing LP granite/migmatite contains a Proterozoic component (zircon discordia U.I. at 1160 ± 85 Ma). There is also evidence for an earlier Variscan event (zircon discordia L.I. at 372 ± 9 Ma, rounded zircons concordant at 380 Ma) and a later Variscan one (321–330 Ma, monazite).

Durbachite is also of Variscan age – longer and shorter prismatic zircons of magmatic origin are discordant at 325–332 Ma, with U.I. at 360 Ma. These data are difficult to interpret. For comparison, Holub et al. (1997) reported Pb/Pb zircon age of 340 ± 8 Ma for the Třebíč durbachite.

The age of granulite clasts is consistent with numerous ages of HP granulites exposed in the Moldanubian Zone of the Bohemian Massif (e.g., Aftalion et al. 1989; Wendt et al. 1994; Kröner et al. 1996). Very high average exhumation rates of 4.8 mm/yr have to be envisaged if the zircon ages are attributed to the peak pressure event during granulite metamorphism. Due to the persisting HT on the order of the T_C of the U–Pb system in zircon and monazite during the exhumation, these ages could also reflect the MP granulite overprint. Independent constraints, such as microtextural study, are needed for the interpretation. Important is also a unique evidence for two HT metamorphic events found in the granite/migmatite.

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Petrology and Microstructural Evolution of Orthogneisses in the Eger Crystalline Complex

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Orthogneisses in the Eger Crystalline Complex are exposed at the boundary between two tectonometamorphic units of the Bohemian Massif – the Erzgebirge Crystalline Belt and the Teplá–Barrandian Unit. Stable mineral assemblage in these rocks consists of Q, Plg, Kf, Grt, Bi, ± Mu, ± Ky and suggests amphibolite- to granulite-facies conditions of metamorphism.

Several types of orthogneisses coexist in a small area and indicate particular stages of progressive metamorphic evolution. Four microstructural rock types can be identified: 1) coarse-grained augen orthogneiss, 2) banded anatectic orthogneiss, 3) fine-grained migmatitic gneiss, 4) granulitic gneiss. Coarse-grained augen orthogneiss is composed of monomineralic polycrystalline layers of equigranular Plg and Kf grains meeting at triple points and mica-bearing domains separating these layers from less deformed quartz lenses. Subsequent stage of microstructural evolution is characterized by lining of K-feldspar boundaries by quartz. Quartz films grow and, together with plagioclase, progressively destroy monomineralic K-feldspar aggregates. The resulting texture is characterized by polymineral aggregates separated by discontinuous domains of mica and abundant crystals of garnet. The last stage is characterized by completely recrystallized fine-grained omnidirectional granulitic structure with abundant garnet porphyroblasts. In comparison with other rock types, decreasing amount of biotite is typical for this stage.

Textural and metamorphic relations were studied with special attention to computer processing of digitized SEM-images which represent datasets necessary for quantitative textural analysis (grain size, grain shape, aspect ratio, shape-preferred orientation, grain-boundary orientation, grain-contact frequencies).