

Ultrahigh-pressure metamorphism in the Bohemian Massif

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The Bohemian Massif represents one of the major exposed portions of the Late Palaeozoic Variscan orogen. It is situated in the northeastern edge of this orogen in eastern Central Europe. Like other Variscan basement areas, the Bohemian Massif is characterized by the duality of anchi- to low-grade metamorphic rocks and those of relatively high-grade. In the high-grade units quartzofeldspathic rocks dominate except for the presence of large Late Variscan S-type granitoid bodies.

Within such metamorphic rocks, felsic granulite and gneiss, several peridotite bodies occur in various parts of the Bohemian Massif. Although the appearance of garnet already points to the origin of these peridotites in the deeper upper mantle, very low Al contents of orthopyroxene prove the UHP nature of this rock type.

Lenses of medium to high temperature eclogites, although often broadly transformed to amphibolite or basic granulite, are relatively abundant in the high-grade metamorphic units of the Bohemian Massif. Due to numerous geochronological studies high-pressure metabasites formed in Early Devonian and Early Carboniferous times. Both events had led to UHP eclogites exposed in the Bohemian Massif. However, true indicators for UHPM such as high Si phengite or coesite are very rare. Thus, the peak P conditions for many eclogite lenses are hardly known.

The same is true for the felsic metamorphic rocks. So far, only one UHP occurrence of a metasediment was undoubtedly recognized through the appearance of abundant microdiamonds preserved in garnet, kyanite and zircon. This occurrence in the Saxonian Erzgebirge, situated in the northern Bohemian Massif, is, however, related only to two elongated lenses some hundred meters in length.