First evidence for Lower Cretaceous HP/HT-Metamorphism in the Eastern Rhodope, North Aegean Region, North-East Greece

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Abstract: In the Upper Unit of the Eastern Rhodope, North Aegean region, a Sm-Nd whole-rock, garnet and clinopyroxene isochron of a garnet-pyroxenite (metagabbro), corresponding to an age of $119.0 \pm 3.5$ Ma, gives first evidence of a Lower Cretaceous HP-event in this area. The garnet-pyroxenites are characterised by the assemblage hornblende-spinel ± olivine-garnet-clinopyroxene and are part of a metaperidotite complex. This complex experienced HP/HT-metamorphism, together with the hosting metapelites and orthogneisses. In all rock types, this was followed by near isothermal decompression during exhumation of the metamorphic rocks. In contrast to the situation in the host rocks, HP-mineral assemblages of the investigated sample were not affected by plastic deformation and retrogression during decompression. It is thus assumed that the isotopic equilibrium attained during HP/HT-metamorphism was not disturbed during later events. In addition, Rb-Sr mica ages indicate differential uplift and different minimum ages of Alpine HP-metamorphism in quartzofeldspathic rocks in different tectonic units of the Eastern Rhodope.

Key-words: geochronology, Sm-Nd, HP/HT-metamorphism, garnet-clinopyroxenite, Rhodope Zone.

Geological setting

In northern Greece (northeastern Mediterranean Alpine Belt) HP-metamorphic rocks occur in different structural settings. In NW Greece, HP-metamorphic rocks located along the fossil plate boundary between the Adriatic plate and Eurasia show a low $dT/dP$ ratio. Ages of blueschist-facies metamorphism generally cluster within the Eocene (Schermer et al., 1990, and references therein). To the NE of this suture in NE Greece, an assemblage of fault-bounded metamorphic complexes (Fig. 1) contains pre-Alpine continental crust, intensely reworked during Alpine metamorphism by plastic deformation. In this area, Alpine metamorphism also included HP-stages. However, HP-metamorphism and subsequent decompression occurred at generally higher temperatures, and in quartzofeldspathic rocks HP-mineral assemblages are

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