



Magnetic fabric in ultramafites: resistant to regional metamorphism, susceptible to serpentinization- facilitated deformation

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In the high-grade Moldanubian Zone of the European Variscides of the Bohemian Massif, numerous bodies of ultramafic rocks occur embedded in granulite. In granulite, the magnetic foliation is parallel to the metamorphic foliation and the magnetic lineation is near the mineral alignment lineation. In ultramafite, the magnetic foliation and magnetic lineation are oriented in different ways than those in granulite. The magnetic fabric in ultramafic rocks is therefore different from that in the host granulite even though both rock types underwent at least partially common structural history. The componental movements forming the granulite fabric, mostly during amphibolite facies retrograde metamorphism, were evidently not intensive enough to strongly overprint the magnetic fabric of ultramafite.

In the Central Western Carpathians, the ultramafic rocks occur as tabular or lens-like bodies emplaced into low and medium grade metamorphic rocks, Triassic and even Palaeogene sedimentary rocks. They are mostly serpentinized, with the serpentinization being so strong in some places that the rocks are referred to as serpentinites. The AMS in all ultramafites investigated is carried by new magnetite originated during serpentinization. In weakly serpentinized ultramafites within crystalline basement, the magnetic fabric resembles that in host metamorphic rocks indicating crustal deformation origin. In serpentinites occurring within Carboniferous metasediments, the magnetic fabric also often conforms to the mesoscopic fabric, which indicates at least partial upper crust deformation origin. As the increasing serpentinization is characterized by decreasing the rock strength, it is likely that the ultrabasites loosed their mechanical strength during serpentinization, which may have taken place during exhumation, and may have undergone ductile deformation together with the surrounding crustal rocks.