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1. The first shear zone is situated at the eastern margin of the Moravian Karst at the contact with the Culm (close to Ostróv village). Limestones bedding in this brittle-ductile shear zone is overturned and cut by spaced cleavage, so originally bedded limestones look like nodular rocks. Central part of the shear zone is cut by large fault and the strained Devonian rocks are thrust over the Culmian siliciclastic rocks. The trend of maximal stress \( \sigma_1 \) could be estimated from the interval N-S to NE-SW.

The subsequent brittle deformations pass in several phases. One of them, development of nearly symmetrical pairs of kink bands whose axes form angles of 30°, is connected with compression NE-SW (type D, Ramsay and Huber, 1987). Later phases of fragile deformations were accompanied by the development of undeformed veins and stylolites.

The change of plunge/trend of the structural cylindricity axe and the corresponding lineation are an interesting problem to discuss. In the northern and northeastern part of the studied area the lineation plunges mainly to NNE, while SSW dip prevails in the southwestern part. The parts with different plunge/trend are separated by zone of axial culmination with horizontal lineation and cylindricity axe (\( \sigma_1 \|=Ostróv, see Fig. 1). Similar axial culmination is in the surroundings of Vratíkov village (Melichar and Kalvoda, 1997). Its origin is related to the development of the Václavov trough (halfgraben), where bedding of Cretaceous sandstones was rotated together with Variscan tectonic basement (anomalous plunge to the south). Similary, we can use the same model to explain the described axial flexure with the neotectonic origin of the Blansko trough.

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References


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**Fig. 1.** Map of the northern part of Moravian Karst with averaged lineation, axial culmination and main shear zones.

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**Compositional Zoning in Garnet, a Tool for Understanding of Tectono-Metamorphic Evolution of Metamorphic Complexes: a Case Study from Metabasites of the Kraubath Massif (Eastern Alps)**

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Metabasalts from the Kraubath mafic and ultramafic massif contain chemically zoned relic magmatic clinopyroxene, amphibole and garnet. A weak compositional variation at rims and along cleavage of clinopyroxene grains resulted from partial reequilibration during metamorphism. Difference in composition of clinopyroxene is expressed mainly in the higher XMg (0.9) in
Layered Metaigneous Complex of the Veporic Basement with Features of the Variscan and Alpine Metamorphism (the Western Carpathians, Slovak Republic).

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Geological setting

The Veporicum is an internal part of the central domain of the Western Carpathians and it is an area consisting of several tectonically approached units with different ages. The layered metaigneous complex (LMC) is a part of the Veporic basement of the Central Western Carpathians. This complex is regionally widespread in the northwestern part of the Slovenské Rudohorie Mts. and the eastern part of the Nízke Tatry Mts. The studied basement complex was originally termed as the gabbro-peridotitic-basalt formation (Miko and Putiš, 1989 in Krist et al., 1992) in the area of the eastern Low Tatras Mts. It was included into the leptynite-amphibolite complex (LAC, Hovorka and Méres, 1993). The layered metamagmatic-amphibolitic rocks are part of the pre-Alpine Čierny Balog (CB) supracrustal complex. The CB complex is mainly represented by Ky-Grt gneisses, migmatic gneisses and common to partially melted amphibolites. Strongly layered parts of metadioritic composition, or pale tonalitic to trondhemitic layers are also present within the metadioritic bodies less than 100 m thick. Undifferentiated dioritic parts have composition which is an average of the dark (Amph, Pl, Ttn, + Qtz) and pale (Pl, QTz, Mgt, + Amph, + Bi) bands. A special lithological member appears to be layered amphibolite (resembling leptynite-amphibolites, e.g., Neubauer, 1989; Hovorka et al., 1992; Putiš, 1992) thus representing a characteristic pre-Alpine lithological feature of the layered metaigneous complex.

The most likely mechanism of the relic magmatic layering appears to be magmatic laminar flow, accompanying differentiation and alignment of Pl and Am mega- and microcrysts parallel to the direction of flow, e.g., in porphyric (meta)diorites (e.g., Parsons, 1987; Fountain et al., eds. 1992; Percival et al., 1992; Shelley, 1992; Hall, 1996). The development of layering was influenced by the extensional emplacement conditions of the magmatic sills into the shear zone accompanying an extensional detachment fault. Thus a continuous evolution of the magmatic to subsolidus and solidus foliation might have...