

Structural Profile through the Southern Part of the Svratka Dome (Moravicum)

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The documentation of excavations for a pipeline brought new petrographical and structural data along a SE - NW oriented profile through the S part of the Svratka Dome (Moravicum). The pipeline cut the body of the Bíteš gneiss between the Boskovice Furrow and the Moldanubicum. The Bíteš gneiss is fine- to medium-grained muscovite to biotite muscovite orthogneiss with porphyroclasts of feldspars. Fine-grained orthogneiss without porphyroclasts probably represents deformed veins of aplite. Dynamically recrystallised polycrystalline quartz bands and feldspar porphyroclasts of different generations with mantle - core structure are dominant features of the Bíteš gneiss. Amphibolites and paragneisses in abundant intercalations are strongly weathered. Alternations of garnet mica schist and orthogneiss belonging to the Svratka Crystalline Complex were exposed NW of the village of Pucov.

The orientation of foliations documents the dome structure of the Moravicum. The axis of the anticline is situated here between the villages of Rapotice and Vysoká Popovice and it slightly plunges to the south. Stretching lineations plunging to the SW are more common than the older ones oriented N-S and E-W. It is possible to distinguish at least two deformation stages according to the preferred quartz *c*-axis orientation. The crossed girdles type I along the NNW-SSE oriented lineation indicate medium grade metamorphic conditions. The small circles along the SW-NE oriented lineation could be correlated with younger thrusting to the NE under low grade conditions. The pattern of quartz *c*-axes along the older E-W oriented lineation is overprinted by a younger recrystallization.

Two dominant senses of shearing were documented on the base of kinematic indicators (asymmetric *s* porphyroclast, S-C and S-C' structures). Thrusting towards N to NE represents the common tectonical movements in the Moravicum. The sense of shearing indicating thrusting to the east is probably older. Local normal faults could be related to stages of the orogeny collapse.

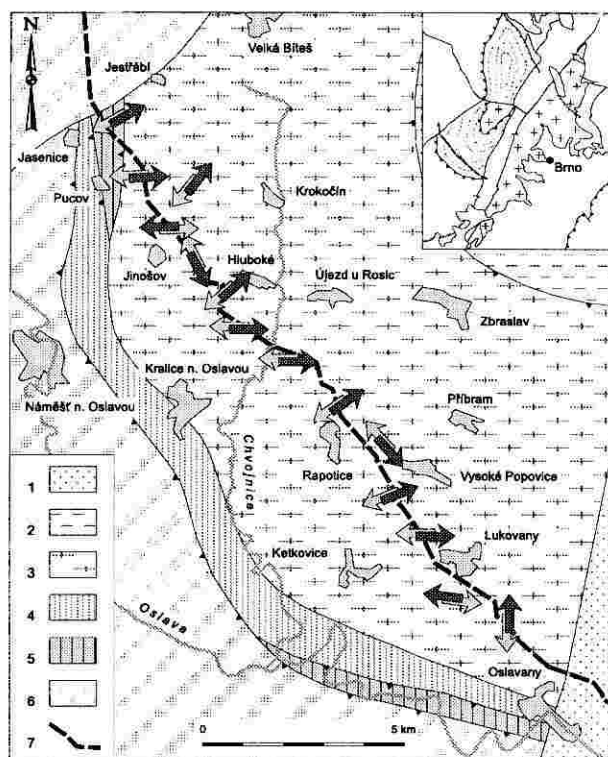


Fig. 1. Simplified geological map and relative sense of shearing along the pipeline. Explanations: 1 - Boskovice Furrow, 2 - Bílý Potok group, 3 - Bíteš gneiss, 4 - Vranov - Olešnice group, 5 - Svratka crystalline complex, 6 - Moldanubicum, 7 - pipeline.

Post-Variscan Deformation in Some Sedimentary Units on the Eastern Margin of the Bohemian Massif

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The Bohemian Massif which is situated in the Alpine foreland was strongly affected by the Alpine tectonic events. The eastern margin of the Bohemian Massif is situated directly in the contact area with the Outer Western Carpathian Belt. On the eastern margin of the Bohemian Massif deformation events connected with the Alpine Orogeny are displayed in the sedimentary record and at a number of sites we can see examples of these deformations.

Evidence of the post-Autunian compression is well visible in the Permian sediments of the Boskovice furrow. Overturned plane of the eastern marginal fault of the Boskovice furrow and the reversed brittle structures in the western part of the furrow show the influence of the compression. An almost subhorizontal thrust with the movement in the W-E direction was found in the Jurassic limestone at Stránská skála Hill in Brno. Influence of the post-Variscan compression is also visib-

le in the Cretaceous sediments. Small, strongly deformed, fragments of the Lower Cretaceous limestone are tectonically incorporated into plutonic rocks of the Brno massif along the thrust structures near Kuřim. Compression connected with movement of the outer Carpathian nappes affected also the Neogene sediments of the Carpathian foredeep close to the front of the nappes. Reversed or strike-slip micro-faults found in the Karpatian psammite near Nítkovice prove this compression.

Sediments in the eastern margin of the Bohemian Massif

show also information about the post-Variscan extension. Large normal faults broke the Upper Cretaceous sandstone in the Blansko through near Bořitov. Normal faults crosscutting the Neogene sediments together with the Quaternary cover are known from the area of Vyškov, normal faults are also in the fluvio-glacial Quaternary sediments near Oldřšov (close to Opava). The Quaternary extension in the Jurassic limestone at Stránská skála Hill in Brno is proved by extension joints filled by the Quaternary gravel.

Geochemistry, Petrology and Mineralogy of the Two-mica Granites of the Novohradské Hory Mts. and the Surrounding Area

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In general, two-mica granites in the area between the town of Trhové Sviny and the Czech-Austrian state boundary are considered as a part of the Eisgarn granite suite, mostly represented by varieties usually termed as Mrákotín and Číměř. The former is exposed in two bodies. The larger one changes in its north-western part to the Číměř variety. Dike granites also occur. These rocks were recently studied in field e.g. by Staník et al. (1978) and Vrána et al. (1984).

Both varieties have many common features, differing mainly by their texture (grain size, presence of phenocrysts). The Mrákotín variety has hypidiomorphic fine- to medium-grained texture with rare phenocrysts of microcline. Its matrix is composed mainly of alkali feldspar (hypidiomorphic to idiomorphic), plagioclase (hypidiomorphic to idiomorphic, An₉₋₂₄, sometimes with albite rims), quartz (xenomorphic, often recrystallised) and micas. Biotite is xenomorphic, red to brown with pleochroic haloes, locally changing to chlorite. Analyses of biotites show 1.8-2.3 wt. % TiO₂, 0.1-0.3 wt. % MnO and mg index of 0.31-0.35. Primary muscovite forms large flakes, secondary sericite replaces feldspars. Accessories are represented by sillimanite, zircon, apatite and ilmenite. The Číměř variety differs mostly by its coarse-grained (porphyritic) texture only. Dike leucogranites are similar to fine-grained granites, sometimes are richer in muscovite.

The Eisgarn granite whole rock chemistry shows features of S-granites. SiO₂ content varies between 71-73 wt. %. Higher contents of K₂O (strongly predominating over Na₂O), Rb, Cs, U, Th and Li and on the contrary lower contents of FeO, MgO, Cr, Co and Ni are typical. Total REE content is in a range of 120-280 ppm. Normalised REE patterns show a strong negative Eu anomaly as well as an enrichment of LREE. Associated leucogranites have quite similar major element contents but they are different in their trace element distributions.

The Mrákotín variety is chemically almost uniform throughout the unit. The Číměř one is very similar but more variable in its chemistry and seems to have lower contents of Zr and LREE. The both varieties are close to an average of Eisgarn type granites presented by Vellmer and Wedepohl (1994).

Chemistry, mineralogy, some textural features and geo-

logical position of these two-mica granites prove clearly their anatectic origin connected with an assimilation of surrounding rocks. Small aggregates of biotites (well-apparent in fine-grained varieties only) as well as parallel structures, locally with abundant biotite (Staník et al. 1978) can be observed. A metapelitic source material, probably containing garnet (Vellmer and Wedepohl 1994) can be assumed according to accessory sillimanite as well as low HREE contents. The chemical composition of the rock is close to an experimentally confirmed granite minimum (e.g. Puziewicz and Johannes 1990). An excess of Fe₂O_{3tot} and MgO suggests a partial (about 5 %) assimilation of biotite rich restites (75 % biotite + 25 % plagioclase can be assumed).

The Eisgarn granite can be considered as a large intrusion of a viscous magma with a relatively small contribution of restites and imperfectly assimilated country rock material. Differences in chemical composition can be explained by a various content of biotite (i.e. assimilated material). Both varieties - fine-grained (Mrákotín) and coarse-grained (Číměř) - are texturally different products of one the same intrusion; fine-grained facies seems to represent a marginal part of the intrusion probably changing to the coarse-grained variety towards the centre. However, contact of these varieties has not been observed in the field.

References

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