

CARBONIFEROUS (NAMURIAN) DEFORMATION IN THE BLANSKÝ LES MASSIF, SOUTHERN BOHEMIA: U–Pb ZIRCON EVIDENCE

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Structural study of Moldanubian granulites from the Blanský les massif (Southern Bohemia) provides evidence for multiple deformation phases. The ductile deformation phase D1 formed a generally NW–trending foliation S1 of the original granulite fabric. The second (D2) deformation stage mostly transposed the older structures S1, resulting in a steep N–trending S2 fabric. These fine-banded structures are interpreted as having been formed by recrystallization of the quartzo-feldspathic matrix of the granulites. The D3 deformation phase constitutes a flat foliation S3, defined by biotite bands dipping to the W on the eastern edge of the Blanský les massif. This deformation stage was characterized by retrogressive changes of garnet to biotite and kyanite to hercynite or sillimanite.

On the easternmost edge of the Blanský les massif, foliation S3 in the retrogressed granulites (Q + Kfs + Plg + Grt + Bt ± Ky ± Sill) is west-dipping, being parallel to the fabric of adjacent Moldanubian metasediments of the Varied Group. In the Křemže valley, retrogressed (Grt–Bt) granulites and paragneisses are cut by slightly deformed granite dykes. This granite is a light grey, medium-grained rock with mineral assemblage Q + Kfs + Bt + Mu + Plg. Its texture is granoblastic to lepidogranoblastic and the medium-grained matrix contains small quartz aggregates concentrating into sub-parallel layers. Slight deformation of this granite was coeval with the main deformation phase recorded in paragneisses (+ migmatites) of the Varied Group and with retrogression in the granulites.

Zircons separated from the deformed granite were clear and brownish in colour. The zircon size fractions 70–140 μm of the euhedral, prismatic (stubby prisms) and euhedral (needles) morphological varieties were air-abraded. A back-scattered and electron microprobe study was carried out on these zircons. When plotted on the conventional concordia diagram, the U–Pb zircon data points define discordia lines with lower intercepts at ca. 320 Ma (one concordant fraction) and with upper intercepts at 979 ± 30 Ma, 1219 ± 30 Ma and 1533 ± 44 Ma, respectively. We interpret the lower intercept (c. 320 Ma) as corresponding to a magmatic zircon crystallization from a granitic magma. The values of upper intercepts probably reflect the older age of inherited cores.

On the basis of U–Pb dating and structural analysis we conclude that the obtained age of 320 Ma corresponds to the minimum age of the final (D3) deformation in the Blanský les granulite massif related to uplift of the granulites of the Gföhl nappe.