

minous, the presence of tourmaline shifts the bulk composition to the slightly peraluminous field.

Tourmalines from three localities (Klučov, Terůvky and Pozdátky) were studied and three distinct morphological types were recognized. (i) The most abundant black, prismatic tourmaline (up to 3 cm) occurs in the blocky zone at all localities (Klučov, Terůvky, Pozdátky). (ii) Graphic intergrowths with quartz (in the block zone) and (iii) lath-shaped crystals in the albitized block zone occur only at Klučov. In the BSE image, tourmaline looks relatively homogenous, occasionally with Al-enriched rims, only lath-shaped tourmaline (iii) shows patchy zoning and encloses grains of quartz, feldspar, ilmenite and Ca, REE phosphate. Electron microprobe data were recalculated on bases of 31 anions, contents of B₂O₃ and H₂O were determined by stoichiometry, B = 3, OH+F = 4.

Prismatic tourmaline (i): the X-site is characterized by high content of Ca (up to 0.40 *apfu*) and low vacancy (<0.2 *pfu*). High Fe up to 2.08 *apfu* and Mg up to 2.17 *apfu* are dominant in the Y-site, but high contents of Ti (up to 0.42 *apfu*) were also recorded. Al_{tot} is commonly <6, hence Mg (and/or Fe³⁺) enter the Z-site (<0.95 *apfu*).

Tourmaline from graphic intergrowths (ii): the X-site is mainly occupied by Na (0.61–0.79 *apfu*), content of Ca is minor (< 0.09 *apfu*). In the Y-site, Fe prevails (1.59–2.94 *apfu*), the contents of Mg and Ti are negligible (0.07–0.12 and 0.08–0.13 *apfu*, respectively), Mn varies from 0.11 to 0.43 *apfu*, ⁹Al ranges from 0.02 to 0.66 *apfu*. The Z-site is completely filled by Al.

Lath-shaped tourmaline (iii) has similar composition to that of prismatic tourmaline, differing only in higher contents of Fe (2.37–3.15 *apfu*) and lower amounts of Ca (0.10–0.17 *apfu*).

The pegmatites of the Třebíč durbachite massif with minor tourmaline represent a rare example of the NYF pegmatites. (i) Prismatic Al-poor and Ti-rich tourmaline (Fe-rich dravite to Mg-rich schorl) has the chemical composition different from that of other black tourmalines from Moldanubian pegmatites. (ii) Tourmaline in graphic intergrowths (schorl) is more evolved than the prismatic one, and is characterized by higher amounts of Al, Fe, Mn and low content of Mg. (iii) Lath-shaped tourmaline from albite is probably formed by replacement of biotite during hydrothermal stage.

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Neoproterozoic Metaconglomerates of the Sedlčany–Krásná Hora Metamorphic Islet

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Several metamorphic complexes represent roof pendants of the Central Bohemian Pluton (CPB) at the boundary of the Teplá–Barrandian Zone and the Moldanubian Zone of the Bohemian Massif. The largest metamorphic complex, the Sedlčany–Krásná Hora metamorphic “Islet” (SK) contains almost complete sedimentary record from the Neoproterozoic to the Middle Devonian (Chlupáč, 1989). The succession of the SK Islet consists of Neoproterozoic (meta)volcanosedimentary unit (the Svrchnice Formation; Chlupáč, 1989) which is unconformably overlain by the Early Palaeozoic sequences (Ordovician to Devonian). These rocks are often correlated with similar rocks in other parts of the Teplá–Barrandian Unit, but they also differ in their facies development, thickness and volume of volcanic rocks present (Chlupáč, 1989; Kachlík, 1992). Except for a weak Cadomian

deformation of the Svrchnice Formation, all units in the region underwent a strong Variscan dynamothermal overprint (Kachlík, 1992) associated with the emplacement of intrusions now forming the CBP. The Svrchnice Formation of the SK Islet contains siliciclastic flysch deposits in thicknesses of several hundreds of metres. Laminated meta-siltstones and mudstones alternate with metagreywackes, with subordinate conglomerate intercalations (Vletice Conglomerate; Chlupáč, 1989) at several structural levels. The bimodal (sub)volcanic rocks of island-arc affinity are scarcely preserved (Kachlík et al., 2000; Vítková and Kachlík, 2001).

In this study we have attempted to constrain the sedimentary sources of the Neoproterozoic Svrchnice Formation using petrographic composition of the pebbles and their matrix and

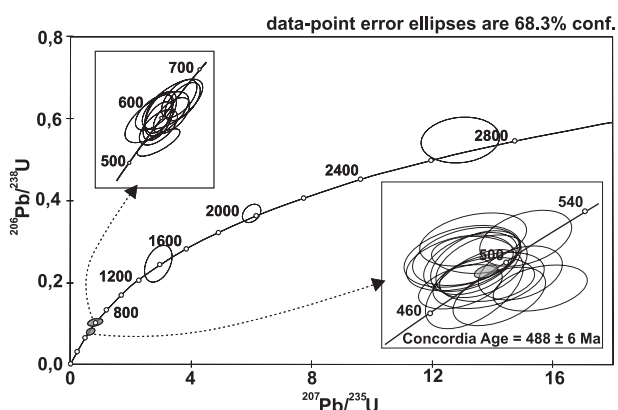


Fig. 1. U–Pb ages of zircons from granitoid pebbles and matrix from sediments of the Vletice Metaconglomerate.

U–Pb dating of zircons from granitoid clasts and from the metaconglomerate matrix (Fig. 1). The conclusions of this study are potentially important for the reconstruction of the paleoposition of the Teplá–Barrandian microplate in the Armorican Terrane Assemblage.

A detailed sedimentological study of rocks exposed in the Štíleček Quarry SW of Sedlčany revealed a metaconglomerate bed approximately 8 m thick and at least 200 m long, with erosional base and negative grading in its lower part. The amount of pebbles and their size increase upward within the bed. The studied sediments from the Štíleček Quarry can be interpreted as submarine channel fills. All pebbles in the metaconglomerate are strongly flattened and recrystallized. The pebbles range from 1 cm to 15 cm in size. They are mostly perfectly rounded, except for some clasts of metasiltstones. The pebbles are mostly formed by quartz (30–60 %), granitoids (15 %), metasiltstones (20–30 %) and quartzites (10–30 %). The predominantly leucocratic to mica-bearing granite pebbles of unknown origin are characterized by a simple mineral assemblage (Qtz, Plg, K-Feldspar, muscovite ± biotite, apatite, magnetite and ilmenite). Metasiltstones represent intraclasts originated from erosive activity of the debris flow deposit. Pebbles of basic and acid volcanics and calc-silicate rocks are rare. Elsewhere, the Svrchnice Formation also contains pebbles of light grey limestone and mica schist with 1 mm crystals of almandine-rich garnet. The content of pure quartzite, granite and crystalline limestone in the pebbles indicates the presence of relatively evolved continental crust in the source area of the Vletice metaconglomerates. If compared with other occurrences of Neoproterozoic conglomerates in the Bohemian Massif, mainly the Dobříš Conglomerate (Fiala, 1948) and the Přisečnice Conglomerate (Klápová and Hyršl, 2000), the Vletice Conglomerate sediments have a higher proportion of quartz, granitoid and quartzite pebbles.

The heavy mineral content in the matrix indicates granitic (magnetite, ilmenite, zircon, apatite) and volcanic (magnetite and hornblende) sources. Zircons from three samples of grani-

toid pebbles and one sample of the metaconglomerate matrix were studied using laser ablation ICP-MS dating technique. Euhedral clear zircon crystals with oscillatory zoning separated from two samples of aplitic granitoids yielded U–Pb concordia ages of ca. 610 Ma. These ages are interpreted as dating the emplacement of Cadomian granitoids in the source area of the conglomerate. Euhedral yellowish zircons with no zoning separated from the third sample of granite yielded a U–Pb concordia age of 488 ± 6 Ma (2 sigma). This granite probably represents a relic of a pegmatite vein emplaced into the Svrchnice Formation during the Cambro-Ordovician interval rather than a pebble within the conglomerate. Several pink rounded zircons separated from the matrix yielded a range of ages (1389 ± 74 Ma, ca 2000 Ma and 2673 ± 62 Ma) that indicate Archaean to Mesoproterozoic sedimentary sources.

As suggested by geochronological and sedimentological evidence, sediments of the Vletice Metaconglomerate were deposited in a basin located close to an evolved continental crust, probably in a closer proximity to the sedimentary source area than the Dobříš Conglomerate. The U–Pb ages of zircons from granitoid rocks suggest a prolonged Cadomian magmatic activity in the source area. The distribution of ages is typical of the West African craton and we favour the interpretation that the Teplá–Barrandian Unit was located close to this craton in the Neoproterozoic times.

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