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MINERALOGIE ELBAITOVÉHO PEGMATITU Z DOLNÍ ROŽÍNKY

MINERALOGY OF THE ELBAITE-SUBTYPE PEGMATITE FROM DOLNÍ ROŽÍNKÁ

FRANTIŠEK NOVOTNÝ, JAN CEMPÍREK

Abstract

Novotný F., Cempírek J., 2021: Mineralogie elbaitového pegmatitu z Dolní Rožínky. - Acta Musei Moraviae, Scientiae geologicae, 106, 1, 3-33 (with English summary).

Mineralogy of the elbaite-subtype pegmatite from Dolní Rožínka

The elbaite-subtype granitic pegmatite from Dolní Rožínka, Czech Republic, is a highly fractionated pegmatite with complex mineralogy and distinct evolution of mineral composition. The pegmatite dike is zoned and from the contact inward can be divided into a graphic unit with biotite (and graphic intergrowths of quartz with tourmaline or garnet), a graphic unit with beryl, blocky unit, albite unit, and pockets. Compositional evolution of tourmaline, beryl, garnet, mica, and Nb,Ta,Sn-oxides was studied in detail. Primary tourmaline develops from Mg-rich, slightly Al-deficient schorl, through Li-rich schorl, to Mn-rich elbaite, in pockets with increased Ca and F contents. Boron-rich fluid allowed formation of metasomatic vein tourmaline enriched in F, Ca, Mn and Mg (schorl, fluor-schorl, fluor-elbaite, elbaite) and secondary metasomatic tourmalines; tourmaline after biotite is rich in Mg and strongly Al-deficient, tourmaline after plagioclase evolves from fluor-elbaite, to fluor-liddicoatite and *liddicoatite*. Early beryl is partially enriched in Na and Mg, whereas content of Na and Cs increase towards the pegmatite center; secondary beryl is strongly enriched in Cs and Na (pezzottaite and very rare avdeevite). Garnet (Fe-bearing spessartine) evolves from $Sps_{56-61}Alm_{38-42}$ in the graphic zone to $Sps_{72-79}Alm_{23}$ in the albite zone. From micas, biotite is the most common whereas polyolithionite (in pockets) and secondary muscovite are rare; polyolithionite locally contains inclusions of Cs-rich polyolithionite to sokolovaitite. Columbite-group minerals show evolution trend with high Mn/(Mn+Fe) that corresponds to F-rich pegmatites. Albite zone contains common Mn-enriched fluorapatite and secondary bertrandite after beryl. Other accessory minerals include pyrochlore-microlite, cassiterite, zircon, and in submicroscopic inclusions also pollucite and petalite. Textural and compositional evolution of the pegmatite from Dolní Rožínka is similar to the elbaite-subtype pegmatites from Pikárec, Rudolfov, and Ctídružice by the presence of common cleavelandite, common graphic textures and complex mineralogy; on the other hand, the Řečice pegmatite has distinctly different, less complex textural development.

Key words: elbaite, pegmatite, tourmaline, beryl, fractionation, Moldanubicum, Czech Republic

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1. ÚVOD

Pegmatity elbaitového subtypu jsou typické pro oblast moldanubika a dnes je známo asi 15 pegmatitových těles (NOVÁK 2005). Elbaitový pegmatit v Dolní Rožince patří spolu s elbaitovým pegmatitem v Řečici (STANĚK a POVONDRA 1987, NOVÁK a KORBEL 1987) me-

KORODOVANÉ GRANÁTY V ASOCIACI TĚŽKÝCH MINERÁLŮ BALINSKÝCH SLEPENCŮ: JEJICH MORFOLOGIE A CHEMICKÉ SLOŽENÍ (SVRCHNÍ KARBON, BOSKOVICKÁ BRÁZDA)

CORRODED GARNETS IN THE ASSOCIATION OF HEAVY MINERALS OF BALINKA
CONGLOMERATES: THEIR MORPHOLOGY AND CHEMICAL COMPOSITION
(UPPER CARBONIFEROUS, BOSKOVICE BASIN)

PAVLA HRŠELOVÁ, STANISLAV HOUZAR, JINDŘICH ŠTELCL

Abstract

Hršelová, P., Houzar, S., Štelcl, J., 2021: Korodované granáty v asociaci těžkých minerálů balinských slepenců: jejich morfologie a chemické složení (svrchní karbon, boskovická brázda). - Acta Musei Moraviae, Scientiae geologicae, 106, 1, 35-50 (with English summary).

Corroded garnets in the association of heavy minerals of Balinka conglomerates: their morphology and chemical composition (Upper Carboniferous, Boskovice Basin)

Two populations of garnet with oriented corroded surfaces were found in the assemblage of the heavy minerals of the Upper Carboniferous Balinka conglomerates at the base of the sedimentary formation of the Boskovice Basin. The dominant almandine garnets $Alm_{65-85} Prp_{13-18} Sps_{1-2} Grs_{1-5}$ can be traced to gneisses and mica-schists of the adjacent geological units. Minor pyrope dominant garnets $Prp_{68-71} Alm_{13-20} Grs_{11-12} Uvt_{5-9} Sps_{1-2}$ come from serpentinized peridotites. Both types of garnets were affected by intrastratal dissolution and exhibit significant oriented corrosion of their surface. There are known types of micro-textures such as etch pits, mamillae features and parqueting, and imbricate wedge marks (IWMs) with hacksaw terminations. Etching on (110) dominates on crystallographically oriented faceted surfaces. No authigenic overgrowth of garnets were found, which would differ in different morphology and especially distinct core-rim chemical composition. The pores after the decomposition of the garnets were filled by calcite and clay minerals and sole Cr-illite has been identified. Strong corrosion of garnet grains probably took place during the diagenesis of sediment at depths of ~2500 meters. The depth of sediment burial, along with the greater permeability of grain-heterogeneous conglomerates, in contrast to sandstones and aleuropelites, also caused an overall depletion of garnet-containing heavy-mineral assemblages.

Key words: Balinka conglomerate, heavy minerals, garnets, dissolution, surface features

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1. ÚVOD

Využití studia těžkých minerálů (TM) je běžným postupem při vyhodnocování proveniencí sedimentů. Výsledné složení těžkých minerálů v usazených horninách je dáno řadou fakto-

VIVIANIT Z KVARTÉRNÍCH SEDIMENTŮ V DOLNÍ LUTYNI (SLEZSKO, ČESKÁ REPUBLIKA)

VIVIANITE FROM THE QUATERNARY SEDIMENTS IN DOLNÍ LUTYNĚ
(SILESIA, CZECH REPUBLIC)

JAKUB JIRÁSEK, DALIBOR MATÝSEK, ANETA MINAŘÍKOVÁ

Abstract

Jirásek, J., Matýsek, D., Minaříková, A., 2021: Vivianit z kvartérních sedimentů v Dolní Lutyni (Slezsko, Česká republika). – Acta Musei Moraviae, Scientiae geologicae, 106, 1, 51-56 (with English summary).

Vivianite from the Quaternary sediments in Dolní Lutyně (Silesia, Czech Republic)

Vivianite was found in an active sand and gravel pit Dolní Lutyně – Velké Lány, Silesia, Czech Republic. It extracts mineral raw material from Quaternary fluvial channels filled by glacial fluvial gravel and sand with clayey intercalations of moraine origin, overlaid by melting water subglacial sediments of the progressive phase of glaciation and discontinuous sediments from the retreat glaciation phase. Loess loamy clays, peat clays, and peat are locally situated in their overburden. Vivianite forms powdery dark blue aggregates in the silt sediments with organic matter. The unit-cell parameters refined from X-ray powder diffraction data are: $a = 10.0319(4)$, $b = 13.4177(4)$, $c = 4.6918(2)$ Å, $\beta = 102.294(3)^\circ$ and $V = 617.06$ Å³. Microchemical analysis of vivianite (average from 6 spots) corresponds to the empirical formula $\text{Fe}^{2+}_{2.99}\text{Mn}^{2+}_{0.02}\text{Ca}_{0.01}\text{Mg}_{0.01}(\text{PO}_4)_{1.97} \cdot 8.01 \text{H}_2\text{O}$, as the water was calculated from the $\text{M}^{2+} / \text{H}_2\text{O}$ ratio according to the ideal formula and after recalculation based on 16 oxygen atoms per formula unit. Minor isomorphic admixtures are Mn (max. 0.025 *apfu*), Mg (max. 0.020 *apfu*), and Ca (max. 0.015 *apfu*). Average SiO_2 content 0.57 wt. % might be ascribed to the surrounding clay matrix. Vivianite is associated with organic matter (leaves, seeds) deposited in the fluvial silt sediments, which supplied both P and reductive environment necessary for the mineral formation.

Key words: vivianite, Holocene, Quaternary, Czech Republic

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1. ÚVOD

Vivianit býval v minulosti na našem území poměrně často popisovaným minerálem, zejména z říčních a jezerních sedimentů a jiných usazených hornin bohatých na organický materiál. V prostoru Moravy a české části Slezska je zmiňován např. z Lískovce u Frýdku-Místku, Dobré nebo Horní Líšné (MOSER 1876), z Třebíč-Boroviny (SEKANINA 1937),

VLTAVIN ZE ŠTĚRKOVÉ TERASY ŘEKY DYJE U OBLEKOVIC (ZNOJEMSKÁ PODOBLAST)

MOLDAVITE FROM THE GRAVEL TERRACE THE DYJE RIVER NEAR OBLEKOVICE
(ZNOJMO SUBREGION)

JAROSLAV ŠMERDA

Abstract

Šmerda, J., 2021: Vltavin ze štěrkové terasy řeky Dyje u Oblekovic (Znojemská podoblast). – Acta Musei Moraviae, Scientiae geologicae, 106, 1, 57-63 (with English summary).

Moldavite from the gravel terrace the Dyje river near Oblekovice (Znojmo subregion)

In the summer of 2020, a small moldavite $22 \times 15 \times 12$ mm in size and weight 3,699 g was found in the sand pit near Oblekovice (Znojmo, Southern Moravia). This finding deserves attention due to the fact that it was obtained from gravel accumulations (Pleistocene) on the right bank of the river Dyje and it is the second finding in a such position within the Znojmo moldavite subregion. It supports the idea of a significantly larger extent of the original strewn-field and number of moldavites after the impact event. Searching for new moldavite localities along the contact of the Carpathian Foredeep sediments with the pre-Miocene crystalline rocks of the Bohemian Massif and especially with the Waldviertel, is promising. Apart from slope movements, surface drainage has played an extremely important role in their secondary distribution since the end of the Tertiary. Any similar occurrence of moldavite is therefore important for studying the origin and development of the river network, fluvial deposits and landscape development.

Key words: moldavite, new lokality, clastic sediments, Znojmo, South Moravia

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ÚVOD

První publikované zprávy o nálezích vltavinů na Znojemsku pocházejí z počátku 20. století (POKORNÝ a VRBKA 1901, PEŘINKA 1905). Ojedinelé a nepřesně dokumentované nálezy měly původ v pleistocenních štěrcích Jevišovky v okolí Hrušovan nad Jevišovkou. Až v 60. letech se veřejnost dozvídá o jejich výskytu na relativně bohatých nálezích u Kuchařovic a Suchohrdel v severním okolí Znojma. Lokality „vychozené“ sběratelem R. Rychlíkem ale poprvé popsal KAFKA (1964, 1965). Zásadními příspěvky k poznání nálezích „znojemské podoblasti“ přispěli charakteristikou nálezů MRÁZEK (1976), stratigrafickým zhodnocením ČTYROKÝ (1980) a údaji o chemickém složení místních vltavinů např. BOUŠKA *et al.* (1991) a ŠMERDA (1999). Přehlednou bibliografii a popis výskytů v neogenních a pleistocenních uloženinách na Znojemsku podává již starší monografie věnovaná moravským vltavinům od TRNKY a HOUZARA (1991). Až na náhodný nález vltavinu na Kraví hoře u Konic (HOUZAR *et al.* 1993) byla pozornost badatelů a sběratelů zaměřena do oblasti mladších pokryvných uloženin nacházejících se v různých výškových úrovních v rozvodí Dyje a Jevišovky. Objev vltavinu ve štěrcích na Šobesu (ŠMERDA 2003) a opě-

PRVKOVÁ CHEMOSTRATIGRAFIE SVRCHNÍ KŘÍDY V OKOLÍ LETOVIC (ČESKÁ KŘÍDOVÁ PÁNEV, ČESKÁ REPUBLIKA)

ELEMENT CHEMOSTRATIGRAPHY OF THE UPPER CRETACEOUS IN THE VICINITY
OF LETOVICE (BOHEMIAN CRETACEOUS BASIN, CZECH REPUBLIC)

JOSEF RIEGL, TOMÁŠ KUMPAN

Abstract

Riegl, J., Kumpan, T., 2021: Prvková chemostratigrafie křídý v okolí Letovic (česká křídová pánev, Česká republika). - Acta Musei Moraviae, Scientiae geologicae, 106, 1, 65–77 (with English summary).

Element chemostratigraphy of the Upper Cretaceous in the vicinity of Letovice (Bohemian Cretaceous Basin, Czech Republic)

The study provides new data on a major and trace element composition of the Upper Cretaceous Peruc-Korycany and Bílá Hora formations belonging to the Orlice-Žďár sub-basin of the Bohemian Cretaceous Basin, Czech Republic. Samples were taken in regular vertical spacing (20 and 40 cm) from three sections in the surroundings of Letovice (Březinka, Rudka u Kunštátu – Křib, Vlkov). Lithology of the sections was logged, and six lithofacies (labelled as F1 to F6) were distinguished. The samples were powdered in an agate mill and measured by the handheld X-ray fluorescence spectrometer. Principal component analysis revealed groups of elements with common geochemical behaviour related to biogenic carbonate (Ca, Sr), detrital (Al, Zr, K, Fe, Zn, Pb), authigenic (Fe, Zn, Mn) and mixed detrital-biogenic (Si) mineral phases. A special attention was paid to examining relationship of detrital elements and facies. The uppermost part of the Peruc-Korycany Formation (Korycany Member) has the highest content of Si, K, and Fe. The basal member of the Bílá Hora Formation is characterised by the highest concentrations of Al, Ti, Zr, Zn, Mn, and Pb, and the lower and upper members of the Bílá Hora Formation have the highest content of Ca and Sr. Trends of linear regressions among Al, Zr and Ti are different for each lithostratigraphic member. The Korycany Member (facies F1), basal member of the Bílá Hora Formation (facies F2), and medium to coarse grained sandstone facies F6 of the upper member have high Fe/Al and low Ti/Al and Zr/Al ratios, compared to the marlstone to medium grained sandstone facies F3, F4, and F5 of the lower and upper members of Bílá Hora Formation. These differences are interpreted as reflecting a change of heavy minerals associations probably related to sorting mechanisms rather than to a change in a provenance. Ti is interpreted as the most typical element proxies of grain size in the Bílá Hora Formation, where Ti (mostly incorporated in silt and fine grained fraction, and eventually in illite) decreases along with coarsening. The Ti curve reflects general coarsening upward trend represented by two cycles in the Bílá Hora Formation. The lower and upper cycles are tentatively correlated with genetic sequences TUR 1 and TUR 2, respectively, related to sea-level fluctuations in the Bohemian Cretaceous Basin.

Key words: Bohemian Cretaceous Basin, Cenomanian, Turonian, Bílá Hora Formation, geochemical proxies
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ÚVOD

Česká křídová pánev je epikontinentální transtenzní pánev, která vznikla během pozdně křídového eustatického maxima v raném cenomanu a zbytky její nejmladší výplně mají san-

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