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PŮVODNÍ PRÁCE/ORIGINAL PAPER

Ranciéit a doprovodné minerály z Rychaltic u Frýdku-Místku (Morava, Česká republika)

Ranciéite and accompanying minerals from Rychaltice near Frýdek-Místek (Moravia, Czech Republic)

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Abstract

Recently described small outcrop of the upper part of the Barnasiówka Formation yielded several manganese oxidic minerals. Outcrop at the bank of the Kralovice Stream (GPS N 49°38.623' E 018°14.630') consists of Lower Turonian greenish to grey-black laminated claystone alternating with grey chert. The whole sequence is a part of the Baška facies of the Silesian Unit, Outer Western Carpathians. In the middle part of the profile occur concretionary aggregates containing manganese minerals. The central pale part of these aggregates is composed of quartz (ca. 90 wt.%), albite (ca. 9 wt.%), and muscovite, the darker rim of quartz (ca. 80 wt.%), goethite (ca. 10 wt.%), illite, todorokite, plagioclase, K-feldspar, and pyrite. Occasionally, remains of Mn-rich siderite were preserved in the cores. We suppose that they are in fact weathering products of carbonate-rich silicites. Manganese oxides also enter fissures in form of thin black coatings. Powder X-ray diffraction proved the presence of todorokite, ranciéite, pyrolusite, and possible vernadite. Todorokite forms black coatings with submetallic lustre, often associating with ranciéite. Ranciéite is dark pink to pinkish-brown, with a metallic lustre. Back-scattered electron images reveal its extremely thin tabular, sometimes undulated crystals and hexagonally oriented intergrowths. Powder diffraction data are strongly affected by preferred orientation, with dominating basal reflections of 001 plane at 7.4849 Å and plane 002 at 3.7424 Å. Its average formula from nine WDS spots $(\text{Ca}_{0.14}\text{Mg}_{0.01}\text{Ba}_{0.01}\text{K}_{0.01})_{\Sigma 0.17}(\text{Mn}^{4+}_{0.86}\text{Si}_{0.02}\text{Al}_{0.03}\text{Fe}_{0.01})_{\Sigma 0.92}\text{O}_{2.00} \cdot 0.88\text{H}_2\text{O}$ (based on 2 anions, water calculated from the ratio of cation sum / H₂O in the formula according to Post et al. 2008) and CaO/MnO₂ ratio 9 to 12 correspond well to the published data for this phase. Ranciéite is a rather common phyllomanganate from various geological environments, but this locality represents its first unambiguous occurrence in the Czech Republic. It closely resembles the one from Polish flysch Carpathians from Nowa Wieś near Rzesów.

Key words: ranciéite, todorokite, pyrolusite, Late Cretaceous, Outer Western Carpathians, Czech Republic

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