

Pelokarbonátový horizont nad 22. slojí ve svrchních sušských vrstvách české části hornoslezské pánve

Siderite concretion horizon above the No. 22 Coal Seam in the Upper Suchá Member of the Czech part of the Upper Silesian Basin

PAVLA GABRHELOVÁ¹⁾, MICHAL OSOVSKÝ²⁾, DALIBOR MATÝSEK³⁾, MARTIN SIVEK¹⁾ A JAKUB JIRÁSEK^{1)*}

¹⁾Institut geologického inženýrství, Hornicko-geologická fakulta, Vysoká škola báňská - Technická univerzita Ostrava, 17. listopadu 15/2172, 708 33 Ostrava - Poruba; *e-mail: jakub.jirasek@vsb.cz

²⁾OKD, a.s., Důl Karviná, závod ČSA, ul. Čs. armády 1, 735 06 Karviná - Doly

³⁾Institut čistých technologií těžby a užití energetických surovin, Institut geologického inženýrství, Hornicko-geologická fakulta, Vysoká škola báňská - Technická univerzita Ostrava, 17. listopadu 15/2172, 708 33 Ostrava - Poruba

GABRHELOVÁ P., OSOVSKÝ M., MATÝSEK D., SIVEK M., JIRÁSEK J. (2014) Pelokarbonátový horizont nad 22. slojí ve svrchních sušských vrstvách české části hornoslezské pánve). *Bull. mineral.-petrolog. Odd. Nár. Muz. (Praha) 22, 2, 293-302. ISSN 1211-0329.*

Abstract

Siderite concretion horizons are known both from the paralic and terrestrial sediments of the Upper Silesian Basin. Significant horizon above the No. 22 Coal Seam in the Upper Suchá Member of Karviná Fm. (Westphalian, Pennsylvanian) was investigated by geological, mineralogical and geochemical methods. Horizon is developed virtually in the whole area of the Upper Suchá Member, where geological documentation is available. It is hosted by grey claystones in the direct roof of the No. 22 Seam, which belongs to the freshwater Faunistic Horizon Group Hubert. Shape of the concretions is mostly ellipsoidal and lensoidal, tabular ones are also present. Their size usually ranges between X0 cm and 1 m. Concretions do not have internal layering, warping of the claystone layering around them was observed. Typical feature of concretions is presence of septarian cracks. Matrix of the concretions is formed almost purely by two populations of non-zoned Mg-Ca or Mg-rich siderite with dispersed quartz, mica and accessory minerals similar to surrounding claystones, i.e. apatite, zircon, monazite and TiO₂ minerals. Septarian fissures are filled by two generations of carbonate with predominant dolomitic composition and beef (fibrous) structure. Older one has dark brown colour, younger is white. Younger dolomite shows weak oscillatory zoning in BSE image caused by distribution of Fe-ions. Youngest fissure minerals are Mg-rich siderite, ankerite, calcite, quartz, baryte, apatite, halite, dickite and mineral from the chlorite group. Common sulphide minerals as pyrite, marcassite, chalcopyrite, sphalerite, galena, millerite and siegenite are also present, together with mineral phases from the vaesite-cattierite-pyrite series. The $\delta^{13}\text{C}$ value of matrix siderite is +0.77 ‰ PDB and that of septarian dolomite -8.15 ‰ PDB, the $\delta^{18}\text{O}$ value of matrix siderite is -11.25 ‰ PDB and that of septarian dolomite -9.79 ‰ PDB. Siderite matrix data shows fractionation during diagenetic processes, while fissure carbonate represents post-sedimentary hydrothermal product. Dolomite isotope data are comparable to those of hydrothermal carbonate mineralization of Early Carboniferous of the Nízký Jeseník Mts. We interpret concretion horizon as sediment of internal part of large-scale freshwater lake. Concretions are very probably syncompactional and develop by pervasive growth mechanism.

Key words: Upper Silesian Basin, Late Carboniferous, septarian concretions, sedimentology, mineralogy

Obdrženo: 9. 9. 2014; přijato: 6. 11. 2014