https://doi.org/10.46861/bmp.31.167 PŮVODNÍ PRÁCE/ORIGINAL PAPER

Sr-Ca-REE (sulfát-)fosfáty ze svrchnokarbonských sedimentů ze Semil (podkrkonošská pánev, Česká republika)

Sr-Ca-REE (sulphate-)phosphates from Upper Carboniferous sediments from Semily (Krkonoše Piedmont Basin, Czech Republic)

Zdeněk Dolníček[1)]*, Jana Ulmanová[1)] a Vojtěch Kaucký[2)]

*[1)] Mineralogicko-petrologické oddělení, Národní muzeum, Cirkusová 1740, 193 00 Praha 9 - Horní Počernice; *e-mail: zdenek.dolnicek@nm.cz*
[2)] VOŠ, G, SPŠ a SOŠ Podskalská, Podskalská 10, 128 46 Praha 2

Dolníček Z, Ulmanová J, Kaucký V (2023) Sr-Ca-REE (sulfát-)fosfáty ze svrchnokarbonských sedimentů ze Semil (podkrkonošská pánev, Česká republika). Bull Mineral Petrolog 31(2): 167-176 ISSN 2570-7337

Abstract

Sporadic grains of the Sr-Ca-REE-rich members of the plumbogummite and beudantite groups were identified in a heavy mineral concentrate separated from Upper Carboniferous freshwater sandstone/arkose of the Semily Fm. at the Semily site (Krkonoše Piedmont Basin, Bohemian Massif, Czech Republic). These minerals display very fine-grained nature, increased porosity and contain abundant inclusions of both detrital (quartz, illite-muscovite) and authigenic (Fe-oxides, anatase) phases. The electron microprobe study revealed four phases including predominant crandallite, less frequent goyazite, and rare woodhouseite and florencite-(Ce), which, however, display great similarities on both cationic (Sr, REE, Ca, Fe contents) and anionic (As and S contents) sites of the formula. Cerium is always the dominating cation among REEs. The studied phases show low degree of fractionation of REEs (La/Sm_{CN} = 2.0 - 8.1), absence of Ce_{CN} anomaly and mostly slightly positive Eu_{CN} anomaly. They likely originated during diagenetic processes operating in the host sediments. When compared with other occurrences of these minerals in the area of Czech Republic, a very low level of REE fractionation is obvious, which can be explained either due to significant contribution of basic volcanites in the host rock environment and/or due to low activity of strong REE-complexing ligands in the parent fluids. However, the character of Ce and Eu anomalies is similar to other occurrences suggesting for similarities of temperature and redox conditions during crystallization.

Key words: *Upper Carboniferous, Krkonoše Piedmont Basin, heavy minerals, crandallite, goyazite, florencite-(Ce), woodhouseite, REE fractionation*

Obdrženo 7. 9. 2023; přijato 20. 11. 2023