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PŮVODNÍ PRÁCE/ORIGINAL PAPER

REE minerály fenitů čistecko-jesenického masivu (Česká republika)

REE minerals of fenites from the Čistá-Jesenice Pluton (Czech Republic)

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Abstract

Alkaline metasomatites (fenites) originated by pervasive Na metasomatism of granitoids of the Čistá-Jesenice Pluton (belonging to the Teplá-Barrandian unit in the NW part of the Bohemian Massif) contain a rich association of REE-bearing minerals. The occurrence of REE carbonates (bastnäsite, parisite), monazite, rhabdophane, churchite, fergusonite and pyrochlore was found in relatively weakly altered rocks (typical fenites), whereas much richer assemblage was observed in rocks which underwent the strongest metasomatism (so called reomorphic cancrinite-nepheline syenites). Here, the mineral assemblage includes in addition to all above mentioned minerals also xenotime and REE silicates, including tritomite/melanocerite, allanite, perbøeite, gadolinite and a Mn-analogue of hingganite. A common mineral phase is zircon in these rocks, too. Cerium, yttrium, and to lesser extent also lanthanum are dominating cations in the studied REE phases. A total of 24 mineral species was identified, including three unnamed phases. In most of the studied phases, the level of fractionation of REEs is high, exceptionally even extreme. Chondrite-normalized REE patterns of some phases are characterized by a pronounced M-type tetrad effect. The results of microprobe analyses suggest that individual minerals originated during several episodes, characterized by different chemical composition of the mineral-forming medium (especially with contrasting concentrations of strong REE-complexing ligands and oxygen fugacity) and/or temperature. We did not find any significant differences in chemistry of individual minerals present in various rock types showing different levels of metasomatic alteration. The obtained data are consistent with hydrothermal origin of most (if not all) reported REE-bearing phases. The material source and genesis of the studied REE+Nb+Zr mineralization was in all probability associated with hydrothermal activity in the exocontact of a deep-seated hypothetical carbonatite intrusion, as was suggested already in earlier works dealing with these remarkable rocks.

Key words: REE minerals, allanite, perbøeite, monazite, bastnäsite, gadolinite, pyrochlore, fenite, Hürky, Čistá-Jesenice Pluton

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