P-Al-Th-REE obohatený zirkón a fáza blízka cheralitu v apliticko-pegmatitickom granofýre na lokalite Dubová - Horné Trávniky pri Modre (Malé Karpaty, jz. Slovensko)

P,Al,Th,REE-rich zircon and cheralite-like phase in aplititic-pegmatitic granophyre from the Dubová, Horné Trávniky near Modra (Malé Karpaty Mountains, SW Slovakia)

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Uher P., Ondrejka M. (2009): P-Al-Th-REE obohatený zirkón a fáza blízka cheralitu v apliticko-pegmatitickom granofýre na lokalite Dubová - Horné Trávniky pri Modre (Malé Karpaty, jz. Slovensko). - *Bull. mineral.-petrolog. Odd. Nár. Muz. (Praha)* **17/2**, 81-86. ISSN: 1211-0329.

Abstract

Accessory zircon and cheralite-like phase occur in Hercynian quartz - K-feldspar - albite aplitic granophyre dike cutting Devonian Ca-skarn and marbles in the Dubová, Horné Trávniky near Modra, SW Slovakia. Zircon forms euhedral to subhedral crystals. Zircon shows 1.5 to 2.7 wt. % HfO_2, $Zr/Hf_{wt.}$ ratio attains 14 to 23. Some zircon compositions show low totals (82 - 92 wt. %), probably due to metamictization and hydration, elevated contents of P (up to 0.25 *apfu*, 7.6 wt. % P_2O_5), Al (up to 0.17 *apfu*, 3.8 wt. % Al_2O_3), Th (up to 0.12 *apfu*, 14 wt. % ThO_2), Y+REE (up to 0.07 *apfu*, 4.3 wt. % $(Y,REE)_2O_3$), and also U, Fe and Ca (up to 0.1 *apfu*). Zircon associates with intermediate cheralite > huttonite phase, rich in Th (up to 0.63 *apfu*, 52 wt. % ThO_2), Ca (up to 0.39 *apfu*, 6.9 wt. % CaO) and Y+REE (up to 0.13 *apfu*, 5.7 wt. % $(Y,REE)_2O_3$). The cheralite-like phase contains also elevated concentrations of Zr (up to 0.05 *apfu*, 2 wt. % ZrO_2), Al (up to 0.17 *apfu*, 2.6 wt. % Al_2O_3), and low analytical totals (83 to 85 wt. oxide %). Textural and compositional relationships indicate a relatively rapid crystallization of the both zircon and cheralite-like phase during magmatic solidification of the host aplitic-pegmatitic granophyre which preserved their intermediate and probably metastable compositions.

Key words: *zircon, cheralite, huttonite, Th-REE minerals, aplitic-pegmatitic granophyre, Modra massif, Malé Karpaty Mts., Slovakia*