PŮVODNÍ PRÁCE/ORIGINAL PAPER

Pozoruhodný výskyt metaťujamunitu a minerálů mixitové skupiny na Dušní žíle (Geister), Jáchymov (Česká republika)

An interesting occurrence of metatyuyamunite and a minerals of the mixite-group from the Dušní (Geister) vein, Jáchymov (Czech Republic)

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Abstract

An interesting association of supergene U and Y/REE minerals was found in the dump material at the Dušní (Geister) vein in the Jáchymov ore district, Czech Republic. The mineral assemblage is represented by anomalously rich and well-crystalline metatyuyamunite associated with metazeunerite and minerals of the mixite group (agardite-(Y) and goudeyite), jarosite and probably chenevixite. Chemical composition of the metatyuyamunite studied was determined by electron microprobe analyses. Its empirical formula can be expressed as $(Ca_{0.81}Pb_{0.22})_{\Sigma 1.03}(U_{0.98}O_2)_2V_{2.05}O_8{\cdot}3H_2O$ (mean of 5 point analyses; on the basis of 15 O and $3H_2O$ *apfu*). Microprobe data indicated that the studied metatyuyamunite represents a Pb-rich variety, which is the first report so far. The refined unit-cell parameters of metatyuamunite from the powder X-ray diffraction data (for the orthorhombic space group *Pman*) are a = 10.615(8), b = 8.399(5), c = 16.824(5) Å with V = 1500(1) Å^3. Minerals of the mixite group are represented by intermediate members of the agardite-(Y)-goudeyite solid solution series. Their empirical formula can be expressed as $[(Y_{0.47}Nd_{0.06})_{\Sigma REE0.53}Al_{0.42}Pb_{0.10}Ca_{0.04})]_{\Sigma 1.09}(Cu_{5.92}Zn_{0.06})_{\Sigma 5.98}As_{2.99}O_{12}(OH)_6{\cdot}3H_2O$ (agardite-(Y)) and $[Al_{0.50}(Y_{0.40}Nd_{0.03})_{\Sigma REE0.43}Pb_{0.08}Ca_{0.04})]_{\Sigma 1.05}(Cu_{5.81}Zn_{0.21})_{\Sigma 6.02}As_{2.98}O_{12}(OH)_6{\cdot}3H_2O$ (goudeyite). Minerals of the mixite group, metytyuyamunite and namely metazeunerite are partly overgrown by jarosite and probable chenevixite. Studied association represents a supergene alteration products of *in-situ* weathering of primary ore mineralization.

Key words: *metatyuyamunite, agardite-(Y), goudeyite, oxide zone, uranium minerals, rare-earth elements, chemical composition, powder diffraction, Jáchymov*

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