

## Parascorodite, $\text{FeAsO}_4 \cdot 2\text{H}_2\text{O}$ —a new mineral from Kaňk near Kutná Hora, Czech Republic

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### ABSTRACT

Parascorodite, a new mineral from Kaňk near Kutná Hora, Central Bohemia, Czech Republic, forms earthy white to white-yellow aggregates associated with scorodite, pitticite, bukovskýite, kaňkite, zýkaite, gypsum, and jarosite. Wet chemical analysis gave (in wt%):  $\text{As}_2\text{O}_5$  44.45,  $\text{P}_2\text{O}_5$  0.84,  $\text{SO}_3$  1.53,  $\text{Fe}_2\text{O}_3$  34.55,  $\text{Al}_2\text{O}_3$  0.17,  $\text{H}_2\text{O}$  17.81, totaling 99.95. The simplified chemical formula is  $\text{FeAsO}_4 \cdot 2\text{H}_2\text{O}$ . Selected area electron diffraction suggests hexagonal or trigonal symmetry. The extinction symbol is  $P$ - $c$ -. Powder X-ray diffraction yielded unit-cell parameters  $a = 8.9327(5)$  Å,  $c = 9.9391(8)$  Å,  $V = 686.83(8)$  Å<sup>3</sup>,  $Z = 6$ . Densities (measured and calculated, respectively) are  $D_m = 3.213(3)$  g/cm<sup>3</sup> and  $D_x = 3.212$  g/cm<sup>3</sup>. SEM and TEM images showed that basal sections of parascorodite are hexagonal in shape; thicker prismatic crystals were also observed. Crystal size varies between 0.1 to 0.5 μm. The strongest lines in the X-ray powder diffraction pattern are [ $d$ ]( $hkl$ ): 4.184(44)(012), 4.076(100)(111), 3.053(67)(202), 2.806(68)(211), 2.661(59)(113), 2.520(54)(212), 2.2891(44)(032). Refractive indexes could not have been measured due to extremely small crystallite size,  $\bar{n}$  (calc) = 1.797. The TG curve shows two weight losses: at 20–150 °C (2.1 wt%, absorbed water) and at 150–620 °C (15.5 wt%, molecular water), respectively. They correspond to the endothermic peaks on the DTA curve at 120 and 260 °C. Strong exothermic reaction observed at 585 °C reflects formation of the phase  $\text{FeAsO}_4$ . Infrared absorption spectra of parascorodite are close to those of scorodite.