## Pakhomovskyite $Co_3(PO_4)_2•8H_2O$

**Crystal Data**: Monoclinic. *Point Group*: 2/*m*. As tabular crystals, typically intergrown as spherulites and rosettes to 0.5 mm.

**Physical Properties**: *Cleavage*: Perfect on {010}. *Fracture*: Stepped. *Tenacity*: Flexible. *Hardness* = ~ 2 D(meas.) = 2.71(2) D(calc.) = 2.71 Dissolves in dilute HCl.

**Optical Properties**: Translucent. *Color*: Bright pink. *Streak*: Pink. *Luster*: Pearly (flakes) to dull. *Optical Class*: Biaxial (+). $\alpha = 1.581(2)$ $\beta = 1.600(2)$ $\gamma = 1.631(2)$ 2V(meas.) = 75-80° 2V(calc.) = 77° *Orientation*: $X = b$, $Y \wedge c = 22\text{-}23°$ in the obtuse $\beta$ angle. *Dispersion*: Weak, $r < v$. *Pleochroism*: $Y$ = pale pink, $Z$ = pinkish gray.

**Cell Data**: *Space Group*: *C*2/*m*. $a = 10.034(4)$ $b = 13.341(3)$ $c = 4.670(3)$ $\beta = 105.02(2)°$ $Z = 2$

**X-ray Powder Pattern**: Kovdor massif, Kola Peninsula, Russia.
6.67 (100), 2.948 (70), 2.691 (70), 3.195 (60), 2.521 (60), 2.408 (60), 4.85 (40)

**Chemistry**:

| | (1) | (2) |
|---|---|---|
| CoO | 34.88 | 44.00 |
| MgO | 2.97 | |
| MnO | 2.41 | |
| FeO | 0.40 | |
| NiO | 0.53 | |
| $P_2O_5$ | 27.95 | 27.78 |
| $H_2O$ | 29.50 | 28.22 |
| Total | 98.64 | 100.00 |

(1) Kovdor massif, Kola Peninsula; average of 10 electron microprobe analyses, $H_2O$ by Penfield method, corresponds to $(Co_{2.38}Mg_{0.38}Mn_{0.17}Ni_{0.04}Fe^{2+}_{0.03})_{\Sigma=2.99}(PO_4)_{2.01}•8.35H_2O$.
(2) $Co_3(PO_4)_2•8H_2O$.

**Mineral Group**: Vivianite group.

**Occurrence**: A low-temperature hydrothermal mineral formed by reactions between primary minerals and alkaline phosphate fluids in dolomite carbonatite cutting phoscorites.

**Association**: Bakhchisaraitsevite, bobierrite, magnetite, kovdorskite, rimkorolgite, juonniite, norsethite, chalcopyrite, phlogopite, pyrrhotite, pyrite.

**Distribution**: From the Iron-Ore complex, Kovdor massif, Kola Peninsula, Russia.

**Name**: Honors Yakov A. Pakhomovsky (b. 1948), a mineralogist of the Geological Institute, Kola Science Center, Russian Academy of Sciences, Apatity, Russia, for his work on the mineralogy of the alkaline massifs of the Kola Peninsula.

**Type Material**: The Mineralogical Museum, St. Petersburg State University and in the Geological and Mineralogical Museum, Geological Institute, Kola Science Center, Russian Academy of Sciences, Apatity, Russia.

**References**: (1) Yakovenchuk, V.N., G.Yu. Ivanyuk, Yu.A. Mikhailova, E.A. Selivanova, and S.V. Krivovichev (2006) Pakhomovskyite, $Co_3(PO_4)_2•8H_2O$, a new mineral species from Kovdor, Kola Peninsula, Russia. Can. Mineral., 44, 117-123. (2) (2006) Amer. Mineral., 91, 1948-1949 (abs. ref. 1).