Rappoldite $PbCo_2(AsO_4)_2 \cdot 2H_2O$

Crystal Data: Triclinic. *Point Group*: $\bar{1}$. Prismatic to tabular crystals, elongated along [$\bar{1}$ 20] to 1 mm, show {210} and {001}; as rosette-like aggregates. *Twinning*: By reflection on {2$\bar{3}$ 0}.

Physical Properties: *Cleavage*: None. *Fracture*: Conchoidal. *Tenacity*: Brittle. Hardness = 4.5 D(meas.) = n.d. D(calc.) = 5.28 Soluble in warm, dilute HCl.

Optical Properties: Transparent. *Color*: Red to red-brown. *Streak*: Light yellow-brown. *Luster*: Vitreous.
Optical Class: Biaxial (+). α(calc.) = 1.85 β = 1.87(2) γ = 1.90(2) 2V(meas.) = 85(5)°

Dispersion: Distinct, $r > v$. *Orientation*: $X \approx$ || c, $Y \approx$ || [$\bar{1}$ 20]. Nonpleochroic.

Cell Data: *Space Group*: $P\bar{1}$. a = 11.190(2) b = 10.548(2) c = 7.593(1) α = 100.38(1)° β = 109.59(2)° γ = 98.96(1)° Z = 4

X-ray Powder Pattern: Rappold mine, near Schneeberg, Saxony, Germany.
3.256 (100), 4.670 (97), 3.072 (56), 2.568 (46), 2.890 (40), 1.731(38), 2.760 (37)

Chemistry:

	(1)
PbO	35.27
CaO	0.12
Bi_2O_3	0.11
Fe_2O_3	0.28
ZnO	4.52
CoO	11.60
NiO	7.31
As_2O_5	35.82
SO_3	0.11
H_2O	5.62
Total	100.76

(1) Rappold mine, near Schneeberg, Saxony, Germany; average electron microprobe analysis supplemented by IR spectroscopy, H_2O calculated; corresponding to $(Pb_{1.01}Ca_{0.01})_{\Sigma=1.02}(Co_{0.99}Ni_{0.62}Zn_{0.35}Fe_{0.02})_{\Sigma=1.98}[(AsO_4)_{1.99}(SO_4)_{0.01}]_{\Sigma=2.00}[(H_2O)_{1.98}(OH)_{0.02}]_{\Sigma=2.00}$.

Mineral Group: Tsumcorite group.

Occurrence: A secondary mineral.

Association: Cobaltlotharmeyerite.

Distribution: From the Rappold mine, near Schneeberg, Saxony, Germany.

Name: For the *Rappold* mine, where the first samples were collected.

Type Material: Bergakademie, Freiberg, Germany.

References: (1) Effenberger, H., W. Krause, H.-J. Bernhardt, and M. Martin (2000) On the symmetry of tsumcorite group minerals based on the new species rappoldite and zincgartrellite. Mineral. Mag., 64, 1109-1126. (2) (2001) Amer. Mineral., 86, 940 (abs. ref. 1).