**Crystal Data**: Orthorhombic. *Point Group*: 2/m 2/m 2/m. As radiating sprays of needlelike rectangular laths elongated along [100] and flattened on {010}, to 0.2 mm

**Physical Properties**: *Cleavage*: Perfect on {010}. *Tenacity*: Brittle. *Fracture*: Uneven. Hardness = n.d. D(meas.) = 2.89 D(calc.) = 2.82

**Optical Properties:** Translucent. *Color*: Light yellow-brown to orange-red. *Streak*: Pale yellow-brown. *Luster*: Dull. *Optical Class*: Biaxial (+).  $\alpha = 1.560(2)$   $\beta = 1.669(2)$   $\gamma = 1.718(2)$  2V(meas.) = 63(1)° 2V(calc.) = 65° *Orientation*: X = b, Y = c, Z = a. *Absorption*: Z >> Y > X. *Dispersion*: Weak, v > r. *Pleochroism*: Weak, Z = orange-brown, Y = yellow-brown, X = light yellow-brown.

**Cell Data**: Space Group: Pmab. a = 10.987(7) b = 25.378(13) c = 6.387(6) Z = 4

**X-ray Powder Pattern**: Cornelia mine, Hagendorf-Süd pegmatite, Oberpfalz, Bavaria, Germany. 12.65 (100), 4.223 (30), 6.421 (14), 6.228 (8), 2.111 (7), 8.339 (5), 5.098(5)

Chemistry:	(1)
ZnO	16.4
MnO	2.6
FeO	[5.8]
Fe <sub>2</sub> O <sub>3</sub>	[25.0]
$P_2O_5$	28.7
$H_2O$	[23.4]
Total	101.9

(1) Cornelia mine, Hagendorf-Süd pegmatite, Oberpfalz, Bavaria, Germany; average of 7 electron microprobe analyses supplemented by IR spectroscopy,  $H_2O$  and  $Fe_2O_3/FeO$  calculated from structure; corresponds to  $Zn_{1.50}Mn^{2+}_{0.27}Fe^{2+}_{0.60}Fe^{3+}_{2.33}(PO_4)_3(OH)_{2.73}(H_2O)_{8.27}$ .

**Occurrence**: In the highly oxidized portion of a phosphate-bearing granitic pegmatite, probably formed from schoonerite by replacement reactions (enrichment of Zn and Fe, depletion of Mn) together with oxidation of  $Fe^{2+}$  to  $Fe^{3+}$ .

**Association**: Phosphophyllite partially altered to steinmetzite, albite, Sr-bearing apatite, chalcophanite, jahnsite, mitridatite, muscovite, quartz.

**Distribution**: Found on the 67 m level, Cornelia open-cut mine, Hagendorf-Süd pegmatite, Hagendorf, Oberpfalz, Bavaria, Germany.

**Name**: Honors Dr. Carl Wilhelm von Gümbel (1823-1898), who was appointed by King Maximilian II to lead the geological studies of Bavaria and provided essential contributions to the mineralogical and geological investigation of pegmatites and their minerals in the northeastern parts of Bavaria.

Type Material: Museum Victoria, Melbourne, Victoria, Australia (M53512).

**References:** (1) Grey, I.E., E. Keck, A.R. Kampf, C.M. Macrae, A.M. Glenn, and J.R. Price (2017) Wilhelmgümbelite,  $[ZnFe^{2+}Fe^{3+}_{3}(PO_{4})_{3}(OH)_{4}(H_{2}O)_{5}] \cdot 2H_{2}O$ , a new schoonerite-related mineral from the Hagendorf Süd pegmatite, Bavaria. Mineral. Mag., 81(2), 287-296. (2) (2017) Amer. Mineral., 102, 2346-2347 (abs. ref. 1).