Schmidite $Zn(Fe^{3+}_{0.5}Mn^{2+}_{0.5})_2ZnFe^{3+}(PO_4)_3(OH)_3(H_2O)_8$

Crystal Data: Orthorhombic. *Point Group*: 2/*m* 2/*m* 2/*m*. As laths elongated along [100] and flattened on {010} to 0.5 mm, in radiating sprays.

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

Optical Properties: [Translucent.] *Color*: Orange-brown to copper-red. *Streak*: n.d. *Luster*: n.d. *Optical Class*: Biaxial (+). α = 1.642(2) β = 1.680(1) γ = 1.735(2) 2V(meas.) = 81.4(8)° 2V(calc.) = 81.8° *Pleochroism*: *X* = light brown, *Y* = medium brown, Z = dark red-brown. *Absorption*: *X* < *Y* < *Z*. *Orientation*: *X* = *b*, *Y* = *c*, *Z* = *a*.

Cell Data: *Space Group*: *Pmab*. *a* = 11.059(1) *b* = 25.452(1) *c* = 6.427(1) Z = 4

X-Ray Diffraction Pattern: Hagendorf-Süd pegmatite, Hagendorf, Oberpfalz, Bavaria, Germany. 12.73 (100), 2.761 (98), 8.347 (39), 3.174 (33), 5.514 (32), 3.753 (32), 5.424 (26)

Chemistry:

	(1)
FeO	0.4
MgO	0.3
Fe_2O_3	23.5
MnO	9.0
ZnO	15.5
P_2O_5	27.6
H_2O	23.3
Total	99.6

(1) Hagendorf-Süd pegmatite, Hagendorf, Oberpfalz, Bavaria, Germany; average electron microprobe analysis, H_2O by TGA and FeO/Fe_2O_3 from Mössbauer spectroscopy; corresponding to $Zn_{1.47}Mn^{2+}_{0.98}Mg_{0.05}Fe^{2+}_{0.04}Fe^{3+}_{2.27}(PO_4)_3(OH)_{2.89}(H_2O)_{8.54}$.

Mineral Group: Schoonerite group. *M*1 = *M*2 = ($Fe^{3+}_{0.5}Mn^{2+}_{0.5}$) and *M*3 = Zn.

Occurrence: On and near altered phosphophyllite in a corroded triphylite nodule in granitic pegmatite.

Association: Phosphophyllite, vivianite, zwieselite, apatite, laueite, whitmoreite, jahnsite-subgroup minerals, mitridatite, scholzite-parascholzite, stewartite, zincostrunzite, hopeite, parahopeite.

Distribution: From the Hagendorf-Süd pegmatite, Hagendorf, Oberpfalz, Bavaria, Germany.

Name: Honors Dr. Hans *Schmid* (1925-2013), mining engineer, geologist, and discoverer of a large commercial triphylite deposit in the Hagendorf-Süd pegmatite.

Type Material: Museums Victoria, Melbourne, Australia (M53810 and M53811).

References: (1) Grey, I.E., E. Keck, A.R. Kampf, J.D. Cashion, C.M. MacRae, and A.M. Glenn (2019) Schmidite and wildenauerite, two new schoonerite-group minerals from the Hagendorf-Süd pegmatite, Oberpfalz, Bavaria. Mineral. Mag., 83, 181-190. (2) Grey, I.E., A.R. Kampf, E. Keck, C.M. MacRae, J.D. Cashion, and Y. Gozukara (2018) Crystal chemistry of schoonerite-group minerals. Eur. J. Mineral., 30, 621-634.