Guidottiite $(Mn_2Fe^{3+})(SiFe^{3+})O_5(OH)_4$

Crystal Data: Hexagonal. *Point Group*: 6. As grains with a very fine (non-separable) fibrous structure perpendicular to cleavage, to 3 mm.

Physical Properties: *Cleavage*: Perfect on {001}. *Fracture*: n.d. *Tenacity*: n.d. Hardness = 4.25 D(meas.) = 3.33(1) D(calc.) = 3.236-3.291 (for the observed compositional range)

Optical Properties: Nearly opaque. *Color*: Black. *Streak*: n.d. *Luster*: Vitreous to silky. *Optical Class*: n.d. $n = 1.765$

Cell Data: *Space Group*: (2H_2 polytype) $P6_3$. $a = 5.5472(3)$ $c = 14.293(2)$ $Z = 2$

X-ray Powder Pattern: N'chwaning 2 mine, Kalahari manganese field, South Africa.
7.21 (100), 3.543 (50), 2.568 (39), 1.982 (26), 2.381 (25), 2.706 (14), 1.640 (12)

Chemistry:

	(1)
MgO	5.65
MnO	34.21
Fe_2O_3	25.97
SiO_2	21.23
Total (anhydrous)	87.06
H_2O	9.4

(1) N'chwaning 2 mine, Kalahari manganese field, South Africa; average of 90 electron microprobe analyses, H_2O by loss on ignition, presence of Fe^{3+} and Mn^{2+} by analogy to cronstedtite; corresponding to $(Mn_{1.86}Fe^{3+}_{0.61}Mg_{0.54})_{\Sigma=3.01}(Si_{1.36}Fe^{3+}_{0.64})_{\Sigma=2.00}O_5(OH)_4$.

Mineral Group: Serpentine group.

Polymorphism and Series: 2H_1 polytype (i.e., ordered, no layer displacement), with minor amounts of the 2H_2 (with alternating + and –b/3 displacement) randomly interlayered.

Occurrence: In a pocket in a hydrothermally altered, bedded manganese deposit.

Association: Hematite, chlorite, leucophoenicite, caryopilite, barite, rhodochrosite, shigaite, gageite.

Distribution: N'chwaning 2 mine, Kalahari manganese field, Republic of South Africa.

Name: Honors Charles V. Guidotti (1935-2005), University of Maine, USA., for his many contributions to phyllosilicate mineralogy.

Type Material: National Museum of Natural History, Washington, D.C., USA., (174879).

References: (1) Wahle, M.W., T.J. Bujnowski, S. Guggenheim, and T. Kogure (2010) Guidottiite, the Mn-analogue of cronstedtite: A new serpentine-group mineral from South Africa. Clays and Clay Minerals, 58(3), 364-376. (2) (2014) Amer. Mineral., 99, 244-245 (abs. ref. 1).