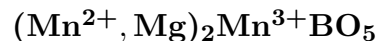


Takéuchiite

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Crystal Data: Orthorhombic. *Point Group:* $2/m\ 2/m\ 2/m$. As acicular crystals, to 1 cm, with rhomboidal cross section \perp to the dominant form $\{320\}$.

Physical Properties: *Fracture:* Uneven. Hardness = ~ 6 D(meas.) = n.d. D(calc.) = 3.93

Optical Properties: Opaque. *Color:* Black. *Streak:* Brown. *Luster:* Metallic.
Optical Class: [Biaxial.] $\alpha = \text{n.d.}$ $\beta = \text{n.d.}$ $\gamma = \text{n.d.}$ $2V(\text{meas.}) = \text{n.d.}$

Cell Data: *Space Group:* $Pn\bar{m}$. $a = 27.585(4)$ $b = 12.561(3)$ $c = 6.027(2)$ $Z = 24$

X-ray Powder Pattern: Långban, Sweden.

1.511 (100), 2.60 (90), 5.20 (85), 2.035 (80), 2.73 (70), 2.209 (70), 3.02 (65)

Chemistry:

	(1)
B ₂ O ₃	17.10
Mn ₂ O ₃	35.56
Fe ₂ O ₃	7.43
MnO	8.99
MgO	30.84
TiO ₂	0.50
Total	100.42

(1) Långban, Sweden; by electron microprobe, average of 12 analyses of 4 specimens; total Fe as Fe₂O₃, Mn³⁺:Mn²⁺ derived from crystal-structure analysis; corresponds to (Mn_{1.56}²⁺Mg_{0.26}Fe_{0.19}Ti_{0.01})_{Σ=2.02}Mn_{0.92}³⁺BO₅.

Occurrence: Very rare in museum specimens from a metamorphosed Fe–Mn orebody.

Association: Dolomite, calcite.

Distribution: From Långban, Värmland, Sweden.

Name: Honors Professor Yoshio Takéuchi (1924–), University of Tokyo, Tokyo, Japan, who predicted the existence of the species and its crystal structure.

Type Material: Swedish Museum of Natural History, Stockholm, Sweden; National Museum of Natural History, Washington, D.C., USA, 138548.

References: (1) Bovin, J.-O. and M. O’Keeffe (1980) Takéuchiite, a new oxyborate mineral from Långban, Sweden. *Amer. Mineral.*, 65, 1130–1133. (2) Norrestam, R. and J.-O. Bovin (1987) The crystal structure of takéuchiite, Mg_{1.71}Mn_{1.29}BO₅. *Zeits. Krist.*, 181, 135–149. (3) Cooper, M.A. and F.C. Hawthorne (1998) The crystal structure of blatterite, Sb₃⁵⁺(Mn³⁺, Fe³⁺)₉(Mn²⁺, Mg)₃₅(BO₃)₁₆O₃₂, and structural hierarchy in Mn³⁺–bearing zigzag borates. *Can. Mineral.*, 36, 1171–1193.