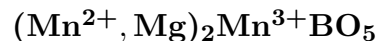


**Takéuchiite**

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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 =  $\sim 6$  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 <sub>2</sub> O <sub>3</sub>	17.10
Mn <sub>2</sub> O <sub>3</sub>	35.56
Fe <sub>2</sub> O <sub>3</sub>	7.43
MnO	8.99
MgO	30.84
TiO <sub>2</sub>	0.50
Total	100.42

(1) Långban, Sweden; by electron microprobe, average of 12 analyses of 4 specimens; total Fe as Fe<sub>2</sub>O<sub>3</sub>, Mn<sup>3+</sup>:Mn<sup>2+</sup> derived from crystal-structure analysis; corresponds to (Mn<sub>1.56</sub><sup>2+</sup>Mg<sub>0.26</sub>Fe<sub>0.19</sub>Ti<sub>0.01</sub>)<sub>Σ=2.02</sub>Mn<sub>0.92</sub><sup>3+</sup>BO<sub>5</sub>.

**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<sub>1.71</sub>Mn<sub>1.29</sub>BO<sub>5</sub>. *Zeits. Krist.*, 181, 135–149. (3) Cooper, M.A. and F.C. Hawthorne (1998) The crystal structure of blatterite, Sb<sub>3</sub><sup>5+</sup>(Mn<sup>3+</sup>, Fe<sup>3+</sup>)<sub>9</sub>(Mn<sup>2+</sup>, Mg)<sub>35</sub>(BO<sub>3</sub>)<sub>16</sub>O<sub>32</sub>, and structural hierarchy in Mn<sup>3+</sup>–bearing zigzag borates. *Can. Mineral.*, 36, 1171–1193.