

Crystal Data: Monoclinic. *Point Group:* 2/m. As aggregates to 250 μm composed of irregular 15 μm grains.

Physical Properties: *Cleavage:* None. *Tenacity:* n.d. *Fracture:* Irregular. Hardness = 4-4.5 VHN = 363-390 (25 g load). *D(meas.):* = n.d. *D(calc.):* = 4.62

Optical Properties: Translucent. *Color:* Red-black. *Streak:* Dark brownish red.

Luster: Vitreous. *Pleochroism:* Distinct; reddish orange to dark brownish red.

Optical Class: n.d. *n(calc.):* = 2.03

R₁-R₂: (470) 12.8-13.2 (3.3-3.5)_{oil}, (546) 12.3-12.6 (3.1-3.4)_{oil}, (589) 12.2-12.5 (3.1-3.6)_{oil}, (650) 12.5-12.6 (3.6-4.3)_{oil}

Cell Data: Space Group: $P2_1/m$ (by analogy to gamagarite). $a = 9.10(4)$ $b = 6.13(2)$ $c = 7.89(5)$
 $\beta = 112.2(5)^\circ$ $Z = 2$

X-ray Powder Pattern: The Shiromaru mine, Okutama Town, Tokyo, Japan.
3.31(100), 2.80 (62), 2.71 (40), 3.46 (26), 3.08 (20), 2.90 (19), 2.16 (18)

Chemistry:	(1)
V ₂ O ₅	31.77
SiO ₂	0.15
Al ₂ O ₃	0.07
Fe ₂ O ₃	2.33
Mn ₂ O ₃	11.27
CaO	0.07
BaO	51.91
SrO	0.22
Na ₂ O	0.13
<u>[H₂O]</u>	<u>1.59</u>
Total	99.51

(1) The Shiromaru mine, Okutama Town, Tokyo, Japan; average of 6 electron microprobe analyses, H₂O calculated by analogy to gamagarite, corresponds to

$(\text{Ba}_{1.92}\text{Na}_{0.02}\text{Sr}_{0.01}\text{Ca}_{0.01})_{\Sigma=1.96}(\text{Mn}^{3+}_{0.81}\text{Fe}^{3+}_{0.17}\text{Al}_{0.01})_{\Sigma=0.99}[(\text{V}_{1.99}\text{Si}_{0.01})\text{O}_{7.92}](\text{OH})_{1.00}$.

Mineral Group: Brackebuschite group.

Occurrence: From an outcrop, in an abandoned Mn deposit in brecciated braunite and in veinlets in chert blocks enclosed in sandstone in an accretionary complex. Probably a primary mineral derived from the reaction of braunite with Ba- and V-bearing fluids.

Association: Braunite, hyalophane, tamaite.

Distribution: From the Shiromaru mine, Okutama Town, Tokyo, Japan.

Name: For the metropolitan area containing the first locality.

Type Material: National Science Museum, Tokyo, Japan (NSM-M 28569).

References: (1) Matsubara, S., R. Miyawaki, K. Yokoyama, M. Shimizu, and H. Imai (2004) Tokyoite, $\text{Ba}_2\text{Mn}^{3+}(\text{VO}_4)_2(\text{OH})$, a new mineral from the Shiromaru mine, Okutama, Tokyo, Japan. *J. Mineral. Petrol. Sci.*, 99, 363-367. (2) (2005) *Amer. Mineral.*, 90, 1468 (abs. ref. 1).