## Tamaite $(Ca, K, Na)_xMn_6(Si, Al)_{10}O_{24}(OH)_4 \cdot n\ H_2O$ (x = 1-2; n = 7-11)

**Crystal Data**: Monoclinic. *Point Group*: 2/*m*. As micaceous, platy crystals to ~0.5 mm.

**Physical Properties**: *Cleavage*: Perfect on {001}. *Tenacity*: Brittle. *Fracture*: n.d. Hardness = 4
D(meas.) = 2.85(5) D(calc.) = 2.83 Nonfluorescent.

**Optical Properties**: Transparent. *Color*: Colorless to pale yellowish brown, colorless in thin section. Streak: White. *Luster*: Vitreous to pearly.
*Optical Class*: Biaxial (-). $\beta$ = 1.612(2) 2V = <15° Interference color similar to muscovite.

**Cell Data**: Space Group: $P2_1/a$. $a$ = 16.64(1) $b$ = 27.11(2) $c$ = 25.35(2) $\beta$ = 98.74(7)° Z = 4

**X-ray Powder Pattern**: Shiromaru mine, near Okutama, Tama district, Japan.
12.6 (vvs), 2.69 (vs), 3.13 (s), 2.84 (s), 2.60 (s), 2.46 (s), 3.46 (m)

**Chemistry**:

| | (1) |
|---|---|
| $Na_2O$ | 0.34 |
| $K_2O$ | 0.82 |
| CaO | 1.94 |
| BaO | 2.03 |
| MgO | 0.23 |
| FeO | 0.16 |
| MnO | 35.17 |
| $Al_2O_3$ | 7.79 |
| $SiO_2$ | 41.23 |
| $H_2O$ | 11.07 |
| Total | 100.78 |

(1) Shiromaru mine, near Okutama, Tama district, Japan; electron microprobe analysis, $H_2O$ by Karl-Fischer method, OH and $H_2O$ by analogy to ganophyllite; corresponding to $(Ca_{1.65}K_{0.83}Ba_{0.63}Na_{0.53})_{\Sigma=3.64}(Mn_{23.71}Mg_{0.27}Fe_{0.11}Al_{0.12})_{\Sigma=24.21}(Si_{32.81}Al_{7.19})_{\Sigma=40.00}O_{95.27}(OH)_{16.73} \cdot 21H_2O$.

**Occurrence**: In veinlets to 1.5 mm in width in a weakly metamorphosed Mn ore deposit.

**Association**: Celsian, barian orthoclase, aegirine, manganoan grossular, andradite, strontiopiemontite, copper.

**Distribution**: At the Shiromaru mine, near Okutama, Tama district, ~60 km from Tokyo, Japan.

**Name**: For the locality, the *Tama* district, where the first samples were collected.

**Type Material**: National Science Museum, Tokyo, Japan (NSM-M 27936).

**References**: (1) Matsubara, S., R. Miyawaki, T. Tiba, and H. Imai (2000) Tamaite, the Ca-analogue of ganophyllite, from the Shiromaru mine, Okutama, Tokyo, Japan. J. Mineral. Petrol. Sci., 95, 79-83. (2) (2001) Amer. Mineral., 86, 769 (abs. ref. 1).