Taneyamalite $\mathbf{Na(Mn^{2+}, Mg, Fe^{2+})_{12}Si_{12}(O, OH)_{44}}$

Crystal Data: Triclinic. *Point Group:* 1 or $\overline{1}$. As needlelike crystals, elongated along [001], to 250 μm; in irregular crinkled flakes and subparallel aggregates.

Physical Properties: *Cleavage:* Perfect to good on (010), fair on (100). Hardness = 5–6
D(meas.) = 3.30 D(calc.) = 3.25–3.34.

Optical Properties: Translucent. *Color:* Greenish gray-yellow. *Streak:* Light yellow, brown. *Luster:* Vitreous.
Optical Class: Biaxial (–). *Pleochroism:* Distinct; X = colorless to pale golden yellow; Y = colorless to yellowish brown; Z = pale yellow to dark brown. *Absorption:* $Z > Y \geq X$.
α = 1.646–1.697 β = 1.664–1.720 γ = 1.676–1.732 2V(meas.) = ~70°

Cell Data: *Space Group:* $P1$ or $P\overline{1}$. a = 10.188–10.198 b = 9.754–9.820 c = 9.485–9.567
$\alpha = 90°30'–90.43°$ $\beta = 70°32'–71.02°$ $\gamma = 108°34'–109.17°$ Z = 1

X-ray Powder Pattern: Taneyama mine, Japan.
9.155 (100), 3.252 (37), 2.774 (24), 7.948 (22), 2.202 (21), 2.665 (18), 3.067 (17)

Chemistry:

	(1)	(2)		(1)	(2)
SiO_2	43.42	40.32	CaO	0.02	0.53
TiO_2	0.75	0.05	Na_2O	1.80	1.63
Al_2O_3	1.25	2.08	K_2O	0.00	0.10
Fe_2O_3	6.39	8.68	H_2O^+		6.99
FeO		11.88	H_2O^-		0.73
MnO	30.97	23.83	H_2O	[7.61]	
MgO	6.25	2.50	Total	[98.46]	99.32

(1) Iwaizawa mine, Japan; by electron microprobe, total Fe as Fe_2O_3, H_2O calculated to give (O+OH) = 44; corresponds to $(Na_{0.96}Ca_{0.01})_{\Sigma=0.97}(Mn^{2+}_{7.20}Mg_{2.58}Fe^{3+}_{1.33}Al_{0.41}Ti_{0.16})_{\Sigma=11.68}Si_{12.00}[O_{29.98}(OH)_{14.02}]_{\Sigma=44.00}$. (2) Taneyama mine, Japan; corresponds to $(Na_{0.91}Ca_{0.16}K_{0.04})_{\Sigma=1.11}(Mn^{2+}_{5.78}Fe^{2+}_{2.85}Fe^{3+}_{1.87}Mg_{1.07}Al_{0.26})_{\Sigma=11.83}(Si_{11.55}Al_{0.44}Ti_{0.01})_{\Sigma=12.00}[O_{30.63}(OH)_{13.37}]_{\Sigma=44.00}$.

Occurrence: In cracks in ferruginous chert, mafic rocks, and limestone subjected to blueschist facies metamorphism (Taneyama mine, Japan); in bedded manganese ores in weakly metamorphosed chert and greenstone of the prehnite-pumpellyite metagraywacke facies (Iwaizawa mine, Japan).

Association: Quartz, hematite, chamosite (Taneyama mine, Japan); caryopilite, bannisterite, braunite, rhodochrosite, calcite, albite, cinnabar, pyrite (Iwaizawa mine, Japan).

Distribution: In the Taneyama mine, Kumamoto Prefecture, and the Iwaizawa mine, near Agano, Saitama Prefecture, Japan. From Brezovia, Yugoslavia. In the USA, from Ward Creek, near Cazadero, and along the Russian River, Sonoma Co., and Pacheco Pass, Santa Clara Co., California.

Name: For the Taneyama mine, Japan, where the mineral was first noted.

Type Material: Department of Geology, Kyushu University, Hakozaki; Sakurai Museum, Tokyo; National Science Museum, Tokyo, Japan; National Museum of Natural History, Washington, D.C., USA, 142945.

References: (1) Aoki, Y., H. Akasako, and K. Ishida (1981) Taneyamalite, a new manganese silicate mineral from the Taneyama mine, Kumamoto Prefecture, Japan. Mineral. J. (Japan), 10, 385–395. (2) Matsubara, S. (1981) Taneyamalite, $(Na, Ca)(Mn^{2+}, Mg, Fe^{3+}, Al)_{12}Si_{12}(O, OH)_{44}$, a new mineral from the Iwaizawa mine, Saitama Prefecture, Japan. Mineral. Mag., 44, 51–53. (3) (1981) Amer. Mineral., 66, 1101 (abs. ref. 2).