

Crystal Data: Triclinic. *Point Group:* $\bar{1}$. Massive stalactitic, to 5 cm long.

Physical Properties: Hardness = ~ 2.5 $D(\text{meas.}) = 2.03$ $D(\text{calc.}) = 2.094$ Readily soluble in H_2O ; dehydrates to ilésite in dry air.

Optical Properties: Transparent to translucent. *Color:* Pale pink; colorless in thin section.

Streak: White. *Luster:* Vitreous.

Optical Class: Biaxial (-). *Dispersion:* Very weak. $\alpha = 1.498(3)$ $\beta = 1.510(3)$ $\gamma = 1.517(3)$ $2V(\text{meas.}) = 70^\circ\text{--}80^\circ$

Cell Data: *Space Group:* $[P\bar{1}]$ (by analogy to chalcantite). $a = 6.37$ $b = 10.77$ $c = 6.13$ $\alpha = 98^\circ 46'$ $\beta = 109^\circ 58'$ $\gamma = 77^\circ 50'$ $Z = 2$

X-ray Powder Pattern: Jokoku mine, Japan.

5.84 (100), 2.727 (72), 4.98 (61), 5.66 (56), 1.622 (31), 2.290 (27), 3.28 (25)

Chemistry:

	(1)	(2)
SO_3	33.06	33.21
FeO	1.13	
MnO	27.34	29.42
ZnO	0.94	
MgO	0.00	
CaO	0.00	
H_2O	37.68	37.37
Total	100.15	100.00

(1) Jokoku mine, Japan; corresponds to $(\text{Mn}_{0.94}\text{Fe}_{0.04}\text{Zn}_{0.03})_{\Sigma=1.01}(\text{S}_{1.00}\text{O}_4) \cdot 5.07\text{H}_2\text{O}$.

(2) $\text{MnSO}_4 \cdot 5\text{H}_2\text{O}$.

Mineral Group: Chalcantite group.

Occurrence: As efflorescences in oxidized portions of mine workings, apparently deposited from mine waters at 25°C .

Association: Gypsum, szmikite, ilésite, rozenite, siderotil, ferroxahydrite, mallardite, melanterite, goslarite (Jokoku mine, Japan).

Distribution: In the Jokoku and Inakuraishi mines, Hokkaido, Japan. At Chvaletice, Czech Republic.

Name: For the Jokoku mine, Japan, where the first specimens were collected.

Type Material: Tohoku University, Sendai; National Science Museum, Tokyo, Japan, M-21492; National Museum of Natural History, Washington, D.C., USA, 136582.

References: (1) Nambu, M., K. Tanida, and T. Kitamura (1978) Jôkokuite, $\text{MnSO}_4 \cdot 5\text{H}_2\text{O}$, a new mineral from the Jôkoku mine, Hokkaido, Japan. *Mineral. J. (Japan)*, 9, 28–38. (2) (1979) *Amer. Mineral.*, 64, 655 (abs. ref. 1).