

**Schoenfliesite****MgSn<sup>4+</sup>(OH)<sub>6</sub>**

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**Crystal Data:** Cubic. *Point Group:*  $2/m\bar{3}$ . Very fine-grained, to about 0.5  $\mu\text{m}$ ; as fibrous crusts on cassiterite.

**Physical Properties:** Hardness =  $\sim 4$  D(meas.) =  $> 3.32$  D(calc.) = 3.49

**Optical Properties:** Transparent. *Color:* Colorless.

*Optical Class:* Isotropic.  $n = 1.667(10)$

**Cell Data:** *Space Group:*  $Pn\bar{3}$  (synthetic).  $a = 7.759(6)$   $Z = 4$

**X-ray Powder Pattern:** Synthetic.

3.88 (100), 4.48 (50), 2.74 (25), 1.733 (25), 2.34 (20), 1.938 (20), 1.582 (20)

<b>Chemistry:</b>	(1)	(2)	(3)	(4)
TiO <sub>2</sub>	0.37			
SnO <sub>2</sub>	12.36	61.5	58.7	61.50
Al <sub>2</sub> O <sub>3</sub>	0.98			
B <sub>2</sub> O <sub>3</sub>	0.65			
Fe <sub>2</sub> O <sub>3</sub>	72.24			
FeO	0.76		0.0	
MnO	0.97		3.6	
MgO	4.27	16.5	15.3	16.45
CaO	0.43		0.0	
H <sub>2</sub> O <sup>+</sup>	6.07	22.0	21.8	
H <sub>2</sub> O <sup>-</sup>	0.06			
H <sub>2</sub> O				22.05
insol.	1.04			
Total	100.20	[100.0]	99.4	100.00

(1) Brooks Range, Alaska; averages of varying numbers of determinations on the same sample; calculated to be a mixture of maghemite 57.38%, goethite 17.45%, hulsite 4.33%, fluorite 0.60%, and schoenfliesite 19.51%. (2) Schoenfliesite from (1) recalculated to 100%.

(3) Pitkäranta district, Russia; by electron microprobe, average of 7 points; corresponds to (Mg<sub>0.94</sub>Mn<sub>0.13</sub>)<sub>Σ=0.107</sub>Sn<sub>0.97</sub>(OH)<sub>6.00</sub>. (4) MgSn(OH)<sub>6</sub>.

**Mineral Group:** Schoenfliesite group.

**Occurrence:** A late-stage hydrothermal alteration product of hulsite in a boron-metasomatized limestone near the contact with a granite intrusive (Brooks Range, Alaska, USA); a late-stage low-temperature mineral in serpentinized dolostone associated with W, Sr, B, Be-bearing skarns (Pitkäranta district, Russia).

**Association:** Hulsite, goethite, maghemite (Brooks Range, Alaska, USA); cassiterite, berborite, calcite, fluorite, dolomite, magnetite, chondrodite, diopside (Pitkäranta district, Russia).

**Distribution:** On the northwest flank of Brooks Mountain, Seward Peninsula, Alaska, USA. From the Pitkäranta district, Lake Ladoga, Karelia, Russia. At the Damoshan deposit, Gejiu tin district, Yunnan Province, China. From Sungai Gow, Pahang, Malaysia.

**Name:** To honor Arthur Moritz Schoenflies (1853–1928), Professor of Mathematics, University of Frankfurt-am-Main, Frankfurt, Germany, for his derivation of the 230 space groups.

**Type Material:** n.d.

**References:** (1) Faust, G.T. and W.T. Schaller (1971) Schoenfliesite, MgSn(OH)<sub>6</sub>. *Zeits. Krist.*, 134, 116–141. (2) (1972) *Amer. Mineral.*, 57, 1557–1558 (abs. ref. 1). (3) Nefedov, E.I., W.L. Griffin, and R. Kristiansen (1977) Minerals of the schoenfliesite–wickmanite series from Pitkäranta, Karelia, U.S.S.R. *Can. Mineral.*, 15, 437–445.

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