

**Wickmanite****Mn<sup>2+</sup>Sn<sup>4+</sup>(OH)<sub>6</sub>**

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**Crystal Data:** Cubic. *Point Group:*  $4/m\bar{3}2/m$ . Octahedra, to 4 mm.**Physical Properties:** *Cleavage:* Good on {100}. *Hardness* = 3.5 *D*(meas.) = 3.89(5)  
*D*(calc.) = 3.72–3.75**Optical Properties:** Transparent to translucent. *Color:* Brownish yellow, honey-yellow, yellow-orange, greenish yellow, colorless, pink. *Streak:* White. *Luster:* Resinous.  
*Optical Class:* Isotropic. *n* = 1.705–1.780**Cell Data:** *Space Group:*  $Pn\bar{3}m$ . *a* = 7.85–7.873 *Z* = 4**X-ray Powder Pattern:** Långban, Sweden.  
3.931 (10), 1.7618 (7), 2.778 (6), 1.6080 (5), 4.552 (4), 1.0536 (4), 2.372 (3)

<b>Chemistry:</b>	(1)	(2)	(3)
SnO <sub>2</sub>	59.9	55.1	54.67
MnO	21.4	15.3	25.73
FeO	0.1	8.5	
MgO	0.6	2.4	
CaO	0.4	0.0	
H <sub>2</sub> O	[21.8]	[20.2]	19.60
Total	[104.2]	[101.5]	100.00

(1) Långban, Sweden; by electron microprobe, original analysis given as elements, here converted to oxides; total Fe as FeO, H<sub>2</sub>O calculated from stoichiometry; corresponding to (Mn<sub>0.78</sub>Mg<sub>0.03</sub>Ca<sub>0.01</sub>)<sub>Σ=0.82</sub>Sn<sub>1.02</sub>(OH)<sub>6.24</sub>. (2) Pitkäranta district, Russia; by electron microprobe, average of 17 points; total Fe as FeO, H<sub>2</sub>O calculated from stoichiometry; corresponding to (Mn<sub>0.58</sub>Fe<sub>0.32</sub>Mg<sub>0.16</sub>)<sub>Σ=1.06</sub>Sn<sub>0.98</sub>(OH)<sub>5.99</sub>. (3) MnSn(OH)<sub>6</sub>.

**Mineral Group:** Schoenfliesite group.**Occurrence:** A rare late-stage, low-temperature mineral in magnetite ore and jacobsite-richterite-manganian biotite skarn in a metamorphosed Fe–Mn orebody (Långban, Sweden); in a nepheline syenite pegmatite (Tvedalen, Norway); in a hydrothermal mineral deposit in altered garnet skarn (Pitkäranta district, Russia).**Association:** Bementite, allactite, calcite, barite, magnetite (Långban, Sweden); burtite, stokesite, datolite, pectolite, apophyllite (El Hamman, Morocco); stokesite, axinite, grossular, pargasite, apatite, titanite, orthoclase, chalcopyrite (Whealcock Zawn, England).**Distribution:** From Långban, Värmland, Sweden. In the Heia quarry, Tvedalen, near Larvik, Norway. In the Pitkäranta district, Lake Ladoga, Karelia, Russia. At Whealcock Zawn, Botallack, Cornwall, England. On the west bank of the Beht River, El Hamman, central Morocco. At Tsumeb, Namibia. From Llallagua, Bolivia.**Name:** To honor Professor Franz-Erik Wickman (1915–), Swedish-American mineralogist, for his contributions to Långban mineralogy.**Type Material:** Swedish Museum of Natural History, Stockholm, Sweden, 532405; National Museum of Natural History, Washington, D.C., USA, 120068, 162615.**References:** (1) Moore, P.B. and J.V. Smith (1967) Wickmanite, Mn<sup>2+</sup>[Sn<sup>4+</sup>(OH)<sub>6</sub>], a new mineral from Långban. *Arkiv Mineral. Geol.*, 4(16), 395–399. (2) (1968) *Amer. Mineral.*, 53, 1063 (abs. ref. 1). (3) Nefedov, E.I., W.L. Griffen, and R. Kristiansen (1977) Minerals of the schoenfliesite–wickmanite series from Pitkäranta, Karelia, U.S.S.R. *Can. Mineral.*, 15, 437–445. All rights reserved. No part of this publication may be reproduced, stored in a retrieval system or transmitted in any form or by any means, electronic, mechanical, photocopying, recording, or otherwise without the prior written permission of Mineral Data Publishing.