

**Crystal Data:** Hexagonal. *Point Group:* 6mm. As hexagonal plates or prisms, to 4 mm.

**Physical Properties:** *Cleavage:* On {001}. *Fracture:* n.d. *Tenacity:* n.d.  
Hardness = 6.5-7 VHN = 1032 (300 g load). D(meas.) = n.d. D(calc.) = 3.702(2)

**Optical Properties:** Transparent. *Color:* Orange-red. *Streak:* Light orange. *Luster:* n.d.  
*Optical Class:* Uniaxial (-). *n(calc.)* = 1.85(3) *Pleochroism:* O = reddish brown, E = pale brown.

**Cell Data:** *Space Group:* P6<sub>3</sub>mc. *a* = 5.71050(10) *c* = 27.6760(4) *Z* = 1

**X-ray Powder Pattern:** Koyubi Ridge area, Sør Rondane Mountains, East Antarctica.  
2.42818 (100), 1.42785 (57), 2.01181 (50), 2.6120 (39), 2.4160 (39), 2.8561 (37), 1.54892 (35)

Chemistry:	(1)		(1)
SiO <sub>2</sub>	0.05	CaO	0.01
TiO <sub>2</sub>	7.08	ZnO	0.96
SnO <sub>2</sub>	0.15	NiO	0.01
Al <sub>2</sub> O <sub>3</sub>	66.03	CoO	0.02
Cr <sub>2</sub> O <sub>3</sub>	0.02	F	0.06
Fe <sub>2</sub> O <sub>3</sub>	0.50	Cl	0.01
FeO	4.87	H <sub>2</sub> O	1.00
MnO	0.06	<u>-O = (Cl,F)<sub>2</sub></u>	<u>0.02</u>
MgO	18.71	Total	99.51

(1) Koyubi Ridge area, Sør Rondane Mountains, East Antarctica; average of 46 electron microprobe analyses, Raman spectroscopy confirms presence of OH; corresponding to (Mg<sub>8.2</sub>Fe<sub>1.2</sub>Zn<sub>0.2</sub>)<sup>2+</sup>(Al<sub>22.7</sub>Fe<sub>0.1</sub>)<sup>3+</sup>Ti<sub>1.6</sub>O<sub>46</sub>(OH)<sub>2</sub>.

**Polymorphism & Series:** Part of a solid solution series between the two ideal end-members, (Mg,Fe,Zn)<sup>2+</sup><sub>10</sub>(Al,Fe)<sup>3+</sup><sub>22</sub>Ti<sup>4+</sup><sub>2</sub>O<sub>46</sub>(OH)<sub>2</sub> and (Mg,Fe,Zn)<sup>2+</sup><sub>8</sub>(Al,Fe)<sup>3+</sup><sub>26</sub>O<sub>46</sub>(OH)<sub>2</sub>.

**Occurrence:** The product of retrograde metamorphism in a Mg-Al-rich, Si-poor skarn developed in dolomitic impure marble.

**Association:** Corundum, spinel, phlogopite, clinocllore, rutile, zirconolite, polycrase-(Y).

**Distribution:** From the Koyubi Ridge area, Sør Rondane Mountains, Queen Maud Land, East Antarctica.

**Name:** Identifies a member in the *högbomite* series with a structure based on spinel (S) and nolanite (N) modules and with Mg<sup>2+</sup> > Fe<sup>2+</sup>.

**Type Material:** At the National Museum of Nature and Science, Tokyo (NSM-MF15438), the Polar Science Museum, Tokyo (NIPR-0073), and the Science Museum of Niigata University, Niigata (NUMIN-NM02), Japan. Also at the Museum of Natural History, Bern, Switzerland (NMBE 41105).

**References:** (1) Shimura, T., J. Akai, B. Lazic, T. Armbruster, M. Shimizu, A. Kamei, K. Tsukada, M. Owada, and M. Yuhara (2012) Magnesiohögbomite-2N4S: A new polysome from the central Sør Rondane Mountains, East Antarctica. *Amer. Mineral.*, 97, 268-280.