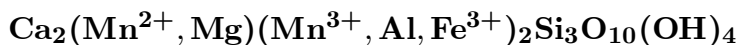


**Okhotskite**

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**Crystal Data:** [Monoclinic] (by analogy to the pumpellyite group). *Point Group:* [2/m.]  
As long prismatic crystals, to 0.2 mm, and as aggregates of prisms.

**Physical Properties:** *Cleavage:* One set observed in thin section. *Hardness* = 6  
D(meas.) = n.d. D(calc.) = 3.40

**Optical Properties:** Transparent. *Color:* Deep orange. *Streak:* Pale orange.

*Luster:* Vitreous.

*Optical Class:* Biaxial (-). *Pleochroism:* Strong; X = yellow; Y = Z = deep orange.

*Orientation:* Y = b; Z  $\wedge$  c = 9°–14°. *Absorption:* Z > Y > X.  $\alpha = 1.782(5)$   $\beta = 1.820(5)$   
 $\gamma = 1.827(5)$  2V(meas.) = 46(5)° 2V(calc.) = 46°

**Cell Data:** *Space Group:* [A2/m.] a = 8.887(5) b = 6.000(4) c = 19.53(2)  
 $\beta = 97.08(6)^\circ$  Z = 4

**X-ray Powder Pattern:** Kokuriki mine, Japan.

2.961 (100), 3.87 (70), 2.720 (70), 4.76 (60), 2.665 (45), 2.553 (45), 2.384 (45)

**Chemistry:**

	(1)
SiO <sub>2</sub>	34.25
TiO <sub>2</sub>	0.09
Al <sub>2</sub> O <sub>3</sub>	4.49
Fe <sub>2</sub> O <sub>3</sub>	6.03
Mn <sub>2</sub> O <sub>3</sub>	16.69
MnO	9.18
MgO	2.08
CaO	20.11
Na <sub>2</sub> O	0.25
K <sub>2</sub> O	0.03
H <sub>2</sub> O	6.89
Total	100.09

(1) Kokuriki mine, Japan; by electron microprobe, H<sub>2</sub>O by TGA, Fe<sup>3+</sup> confirmed by Mössbauer spectroscopy, Mn<sup>2+</sup>:Mn<sup>3+</sup> calculated from stoichiometry; corresponds to (Ca<sub>1.91</sub>Na<sub>0.04</sub>)<sub>Σ=1.95</sub> (Mn<sub>0.69</sub>Mg<sub>0.28</sub>)<sub>Σ=0.97</sub> (Mn<sub>1.13</sub><sup>3+</sup>Al<sub>0.47</sub>Fe<sub>0.40</sub><sup>3+</sup>)<sub>Σ=2.00</sub>Si<sub>3.03</sub>[O<sub>9.93</sub>(OH)<sub>4.07</sub>]<sub>Σ=14.00</sub>.

**Mineral Group:** Pumpellyite group.

**Occurrence:** In network veinlets cutting hematite-rich ores.

**Association:** Hematite, quartz, piemontite, neotocite, bementite, apatite, inesite, rhodochrosite.

**Distribution:** From the Kokuriki mine, at Hiyoshi, about 20 km north of Kitami City, Hokkaido, Japan.

**Name:** For the Sea of Okhotsk, near the type locality in Japan.

**Type Material:** n.d.

**References:** (1) Togari, K. and M. Akasaka (1987) Okhotskite, a new mineral, an Mn<sup>3+</sup>-dominant member of the pumpellyite group, from the Kokuriki mine, Hokkaido, Japan. *Mineral. Mag.*, 51, 611–614. (2) (1988) *Amer. Mineral.*, 73, 1495–1496 (abs. ref. 1).