

**Crystal Data:** Monoclinic. *Point Group:* 2/m. As platy crystals to 0.5 mm.

**Physical Properties:** *Cleavage:* Perfect on {001}. *Fracture:* n.d. *Tenacity:* Flexible and elastic. Hardness = 3 [Synthetic] D(meas.) = n.d. D(calc.) = 2.807

**Optical Properties:** Transparent. *Color:* Colorless. *Streak:* White. *Luster:* Pearly. *Optical Class:* Biaxial (n.d.).  $n = 1.532-1.537$  2V(meas.) = 5-10°

**Cell Data:** *Space Group:* C2/m.  $a = 5.249(4)$   $b = 9.095(5)$   $c = 10.142(5)$   $\beta = 99.96(6)^\circ$   $Z = 2$

**X-ray Powder Pattern:** Bayan Obo, Inner Mongolia, China. 2.41 (100), 10.03 (95), 2.59 (67), 2.90 (49), 3.37, (48), 4.51 (45), 2.62 (43)

Chemistry:	(1)	(2)
SiO <sub>2</sub>	58.8	58.59
Al <sub>2</sub> O <sub>3</sub>	0.41	
MgO	24.7	24.56
FeO	1.00	
MnO	0.02	
TiO <sub>2</sub>	0.01	
K <sub>2</sub> O	8.20	11.48
Li <sub>2</sub> O	1.10	
Na <sub>2</sub> O	0.06	
CaO	0.04	
BaO	0.03	
F	9.04	9.26
H <sub>2</sub> O	0.17	
-O=F	3.81	3.90
Total	99.75	100.00

(1) Bayan Obo, Inner Mongolia, China; average of 15 electron microprobe analyses, SIMS analysis for Li, H<sub>2</sub>O calculated from stoichiometry; corresponding to (K<sub>0.70</sub>Li<sub>0.30</sub>Na<sub>0.01</sub>) $\Sigma=1.01$ (Mg<sub>2.48</sub>Fe<sub>0.06</sub>) $\Sigma=2.54$ (Si<sub>3.96</sub>Al<sub>0.03</sub>) $\Sigma=3.99$ O<sub>10</sub>[F<sub>1.92</sub>(OH)<sub>0.08</sub>] $\Sigma=2.00$ . (2) KMg<sub>2.5</sub>Si<sub>4</sub>O<sub>10</sub>F<sub>2</sub>.

**Mineral Group:** Mica group; Mg-analog of montdorite.

**Occurrence:** Formed in metamorphosed carbonate rock in the transition zone between dolomite and slate in a rare earth-bearing deposit.

**Association:** Dolomite, calcite, tremolite, norbergite, huanghoite-(Ce); with minor phlogopite, barite, bastnäsite-(Ce), parisite-(Ce), fluorite.

**Distribution:** From the southern part of the East orebody, Bayan Obo, Inner Mongolia, People's Republic of China.

**Name:** Honors Professor Yang Zhuming (b. 1951), mineralogist and crystallographer, for his contributions to the mineralogy of the Bayan Obo deposit.

**Type Material:** National Museum of Nature and Science, Tokyo, Japan (NSM-MF15361) and the Institute of Geology and Geophysics, Chinese Academy of Sciences, Beijing, People's Republic of China (KDX015).

**References:** (1) Miyawaki, R., H. Shimazaki, M. Shigeoka, K. Yokoyama, S. Matsubara, and H. Yurimoto (2011) Yangzhumingite, KMg<sub>2.5</sub>Si<sub>4</sub>O<sub>10</sub>F<sub>2</sub>, a new mineral in the mica group from Bayan Obo, Inner Mongolia, China. *Eur. J. Mineral.*, 23, 467-473. (2) (2012) *Amer. Mineral.*, 97, 761 (abs. ref. 1).