

Crystal Data: Monoclinic. *Point Group:* 2/m. As subhedral to euhedral platy crystals to a few hundred microns.

Physical Properties: *Cleavage:* Perfect on {001}. *Tenacity:* Brittle. *Fracture:* Irregular. Hardness = 3-4 D(meas.) = n.d. D(calc.) = 2.966 Nonfluorescent.

Optical Properties: Transparent. *Color:* Brown. *Streak:* Pale brown. *Luster:* Pearly. *Optical Class:* Biaxial (-). *n*(minimum) = 1.576 *n*(maximum) = 1.582 *Pleochroism:* Reverse, *Z'* = colorless, *X'* = light brown.

Cell Data: *Space Group:* C2/m. *a* = 5.325(3) *b* = 9.217(5) *c* = 10.192(7) β = 100.03(5)° *Z* = 2

X-Ray Diffraction Pattern: Bayan Obo, Inner Mongolia, China. 2.62 (100), 3.35 (82), 10.0 (73), 3.15 (64), 3.39 (58), 1.536 (52), 2.43 (48)

Chemistry:	(1)		(1)
SiO ₂	45.38	FeO	[2.25]
TiO ₂	0.03	MnO	0.18
Al ₂ O ₃	0.15	MgO	23.95
BaO	0.31	Li ₂ O	0.50
Na ₂ O	0.11	F	7.12
K ₂ O	10.08	H ₂ O	[0.61]
Fe ₂ O ₃	[11.88]	<u>-O = F</u>	<u>3.00</u>
		Total	99.55

(1) Bayan Obo, Inner Mongolia, China; average electron microprobe analysis supplemented by SIMS for Li, Fe₂O₃ calculated for (Si+Al+Fe³⁺) = 4; remaining Fe taken to be Fe²⁺, H₂O calculated from stoichiometry; corresponds to (K_{0.94}Na_{0.02}Ba_{0.01})(Mg_{2.62}Li_{0.15}Fe²⁺_{0.14}Mn_{0.01})(Si_{3.33}Fe³⁺_{0.66}Al_{0.01})O₁₀[F_{1.65}(OH)_{0.35}].

Mineral Group: Mica group.

Occurrence: In metamorphosed carbonate rocks associated with a large REE-Fe-Nb deposit.

Association: Fluorbritholite-(Ce), norbergite, richterite, serpentine.

Distribution: In the South ore body, East Mine, Bayan Obo, Inner Mongolia, China.

Name: The prefix, *fluoro*, identifies the F-analog of *tetraferriphlogopite*.

Type Material: National Museum of Nature and Science, Tokyo, Japan (NSM-MFI5361) and the Institute of Geology and Geophysics, Chinese Academy of Sciences, Beijing, China (KDX015).

References: (1) Miyawaki, R., H. Shimazaki, M. Shigeoka, K. Yokoyama, S. Matsubara, H. Yurimoto, Z. Yang, and P. Zhang (2011) Fluorokinoshitalite and fluorotetraferriphlogopite: new species of fluoro-mica from Bayan Obo, Inner Mongolia, China. *Clay Science* 15, 13-18.