Fluorannite $KFe^{2+}_3(Si_3Al)O_{10}F_2$

Crystal Data: Monoclinic. *Point Group*: 2/*m*. As euhedral to subhedral sheets and tabular crystals to more than 6 mm.

Physical Properties: *Cleavage*: Perfect {001}. *Fracture*: n.d. *Tenacity*: Sectile. Hardness = n.d. VHN = 93.4-132, 109 average. D(meas.) = 3.15-3.20 D(calc.) = 3.23

Optical Properties: Translucent. *Color*: Iron-black. *Streak*: Gray. *Luster*: Submetallic. *Optical Class*: Biaxial (-). $\alpha = 1.596$ $\beta = \gamma = 1.648$ 2V(meas.) = ~0° 2V(calc.) = 0° *Orientation*: *Y* = *b*. *Pleochroism*: Strong, *X* = pale brown, *Y* = dark green, *Z* = reddish brown.

Cell Data: *Space Group*: *C*2/*m*. $a = 5.369(8)$ $b = 9.289(3)$ $c = 10.153(8)$ $\beta = 100.49(1)°$ Z = 2

X-ray Powder Pattern: Suzhou, near Shanghai, eastern China.
10.09 (100), 5.02 (13), 3.336 (56), 2.507 (14)

Chemistry:

	(1)		(1)
K_2O	8.73	Li_2O	0.47
Na_2O	0.19	TiO_2	1.29
Rb_2O	0.42	ZnO	0.27
CaO	0.02	NiO	0.01
BaO	0.44	SiO_2	34.12
SrO	0.01	Al_2O_3	13.89
FeO	26.19	H_2O	0.91
Fe_2O_3	7.86	F	3.91
MgO	1.49	- O = F	1.65
MnO	0.68	Total	99.25

(1) Suzhou, near Shanghai, eastern China; average electron microprobe and wet chemical analyses, Fe partitioned by Mössbauer spectroscopy; corresponds to $(K_{0.92}Na_{0.03}Rb_{0.02}Ba_{0.01})_{\Sigma=0.98}(Fe^{2+}_{1.82}Fe^{3+}_{0.49}Al_{0.19}Mg_{0.18}Li_{0.16}Ti_{0.08}Mn_{0.05}Zn_{0.02})_{\Sigma=2.99}(Si_{2.83}Al_{1.17})_{\Sigma=4.00}O_{10}[F_{1.03}(OH)_{0.50}\square_{0.47}]_{\Sigma=2.00}$.

Mineral Group: Mica group. 1*M* polytype.

Occurrence: A rock-forming species in the upper part of an A-type granite.

Association: n.d.

Distribution: At Suzhou, near Shanghai, eastern China. At the Katugin Ta-Nb deposit, Chitinskaya Oblast', Kalar Range, Transbaikalia, eastern Siberia, Russia.

Name: Prefix, *fluor*, indicates the fluorine analog of *annite*.

Type Material: Geology and Mineral Resources Institute, Chengdu, and the Geological Museum of China, Beijing.

References: (1) Shen, G., Q. Lu, and J. Xu (2000) Fluorannite: A new mineral of the mica group from the western suburb of Suzhou City. Acta Petrologica Mineral., 19(4), 355-362 (in Chinese, English abs.). (2) (2001) Amer. Mineral., 86, 1534 (abs. ref. 1). (3) Brigatti, M.F., E. Caprilli, D. Malferrari, and A. Mottana (2007) Crystal structure and crystal chemistry of fluorannite and its relationships to annite. Mineral. Mag., 71(6), 683-690.