

Crystal Data: Monoclinic. *Point Group:* $2/m$. As equant anhedral crystals, to 1 cm, and in nodular aggregates.

Physical Properties: *Cleavage:* On {010}, perfect; a parting on {100}. *Tenacity:* Brittle. Hardness = 4 $D(\text{meas.}) = 3.54(1)$ $D(\text{calc.}) = 3.57$

Optical Properties: Transparent. *Color:* Green-brown to red-brown. *Streak:* Yellow-brown. *Luster:* Resinous, bronzy on parting planes.

Optical Class: Biaxial (+). *Pleochroism:* Moderate; $X = Y = \text{yellow-orange}$; $Z = \text{orange}$.

Orientation: $Y = b$; $X \wedge a = 10^\circ$. *Absorption:* $Z > X \simeq Y$. $\alpha = 1.694(1)$ $\beta = 1.698(1)$ $\gamma = 1.715(2)$ $2V(\text{meas.}) = 46.4(2)^\circ$ $2V(\text{calc.}) = 52^\circ$

Cell Data: *Space Group:* $P2_1/n$. $a = 12.776\text{--}12.843$ $b = 12.478\text{--}12.518$ $c = 10.966\text{--}11.035$ $\beta = 97.21^\circ\text{--}97.47^\circ$ $Z = 4$

X-ray Powder Pattern: Cross Lake, Canada.

3.054 (100), 2.082 (67), 2.869 (66), 2.508 (53), 2.712 (49), 1.575 (43), 2.902 (37)

Chemistry:

	(1)	(2)	(3)
P_2O_5	45.2	43.8	43.75
Al_2O_3	7.5	4.9	5.24
Fe_2O_3	6.9	7.4	8.20
FeO	0.3	3.6	
MnO	31.7	32.2	36.44
ZnO	0.1	0.3	
MgO	0.3	0.4	
CaO	1.2	0.6	
Na_2O	6.8	6.3	6.37
H_2O	0.3	0.3	
Total	100.3	99.8	100.00

(1) Cross Lake, Canada; by electron microprobe, average of five analyses, red-brown material; $\text{Fe}^{2+}:\text{Fe}^{3+}$ by Mössbauer spectroscopy; H_2O by TGA; from crystal structure analysis, the semi-empirical formula is $(\text{Na}_{2.07}\text{Mn}_{0.53}\text{Ca}_{0.20})_{\Sigma=2.80}(\text{Mn}_{3.68}^{2+}\text{Al}_{1.39}\text{Fe}_{0.81}^{3+}\text{Mg}_{0.07}\text{Fe}_{0.04}^{2+}\text{Zn}_{0.01})_{\Sigma=6.00}\text{P}_{5.99}[\text{O}_{23.69}(\text{OH})_{0.31}]_{\Sigma=24.00}$. (2) Do.; by electron microprobe, average of two analyses, green-brown material. (3) $\text{Na}_2\text{Mn}_5\text{FeAl}(\text{PO}_4)_6$.

Occurrence: An uncommon primary mineral in the intermediate zone of a granite pegmatite enriched in manganese and fluorine.

Association: Beusite, fillowite, triplite, apatite, alluaudite.

Distribution: From the Gotcha claim, on an island in Cross Lake, Manitoba, Canada.

Name: To honor Emeritus Professor Robert Bury Ferguson (1920–), Canadian mineralogist, University of Manitoba, Winnipeg, Canada, especially for his contributions to pegmatite mineralogy.

Type Material: University of Manitoba, Winnipeg, Manitoba, M6083; Royal Ontario Museum, Toronto, Canada, M42687.

References: (1) Ercit, T.S., A.J. Anderson, P. Černý, and F.C. Hawthorne (1986) Bobfergusonite: a new primary phosphate mineral from Cross Lake, Manitoba. *Can. Mineral.*, 24, 599–604. (2) Ercit, T.S., F.C. Hawthorne, and P. Černý (1986) The crystal structure of bobfergusonite. *Can. Mineral.*, 24, 605–614. (3) (1988) *Amer. Mineral.*, 73, 190 (abs. refs. 1 and 2).