

**Wicksite****NaCa<sub>2</sub>(Fe<sup>2+</sup>, Mn<sup>2+</sup>)<sub>4</sub>MgFe<sup>3+</sup>(PO<sub>4</sub>)<sub>6</sub>•2H<sub>2</sub>O**

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**Crystal Data:** Orthorhombic. *Point Group:* 2/m 2/m 2/m. Crystals are platy on {010}, striated || [100], to 1 cm; granular, massive.

**Physical Properties:** *Cleavage:* Good on {010}. Hardness = 4.5–5 D(meas.) = 3.54(2) D(calc.) = 3.58

**Optical Properties:** Opaque, transparent in thin fragments. *Color:* Dark blue to dark green, nearly black. *Streak:* Green. *Luster:* Submetallic.

*Optical Class:* Biaxial (+). *Pleochroism:* Strong; X = blue; Y = greenish blue; Z = pale yellowish brown. *Orientation:* X = a; Y = b; Z = c. *Dispersion:* r < v, strong. *Absorption:* X = Y > Z. α = 1.713(3) β = 1.718(3) γ = 1.728(3) 2V(meas.) = 66(2)° 2V(calc.) = 72°

**Cell Data:** *Space Group:* Pcab. a = 12.524(1) b = 12.907(2) c = 11.646(2) Z = 4

**X-ray Powder Pattern:** Big Fish River, Canada.

2.753 (100), 3.015 (80), 2.910 (80), 2.118 (60), 2.571 (40), 2.868 (30), 2.837 (30)

**Chemistry:**

	(1)
P <sub>2</sub> O <sub>5</sub>	41.64
Al <sub>2</sub> O <sub>3</sub>	0.51
Fe <sub>2</sub> O <sub>3</sub>	7.98
FeO	22.66
MnO	4.72
MgO	3.77
CaO	11.05
Na <sub>2</sub> O	3.08
H <sub>2</sub> O	3.70
Total	99.11

(1) Big Fish River, Canada; by electron microprobe, FeO 22.66% by titration, excess Fe as Fe<sub>2</sub>O<sub>3</sub>, H<sub>2</sub>O by DTA-TGA; corresponding to Na<sub>1.00</sub>Ca<sub>1.96</sub>(Fe<sub>3.16</sub><sup>2+</sup>Mn<sub>0.66</sub><sup>2+</sup>)<sub>Σ=3.82</sub>Mg<sub>0.94</sub>(Fe<sub>1.00</sub><sup>3+</sup>Al<sub>0.10</sub>)<sub>Σ=1.10</sub>(P<sub>0.98</sub>O<sub>4</sub>)<sub>6</sub>•2.06H<sub>2</sub>O.

**Occurrence:** In nodules in shale beds in an iron formation.

**Association:** Wolfeite, satterlyite, mariçite, ludlamite, vivianite, pyrite, quartz.

**Distribution:** At Big Bend, on the Big Fish River, Big Fish River–Blow River area, Yukon Territory, Canada.

**Name:** To honor Dr. Frederick John Wicks (1937—), Curator of Mineralogy, Royal Ontario Museum, Toronto, Canada.

**Type Material:** Canadian Geological Survey, Ottawa, 61309; Royal Ontario Museum, Toronto, Canada, M37364; National Museum of Natural History, Washington, D.C., USA, 145607, 145968.

**References:** (1) Sturman, B.D., D.R. Peacor, and P.J. Dunn (1981) Wicksite, a new mineral from northeastern Yukon Territory. *Can. Mineral.*, 19, 377–380. (2) (1982) *Amer. Mineral.*, 67, 1077–1078 (abs. ref. 1). (3) Cooper, M.A. and F.C. Hawthorne (1997) The crystal structure of wicksite. *Can. Mineral.*, 35, 777–784.