

**Fluorcalciopyrochlore****(Ca, Na)<sub>2</sub>Nb<sub>2</sub>O<sub>6</sub>F**

**Crystal Data:** Cubic. *Point group:*  $4/m\bar{3}2/m$ . As disseminated euhedral or subhedral grains to 0.3 mm that display {111}, {110}, and {100}.

**Physical Properties:** *Cleavage:* None. *Tenacity:* Brittle. *Fracture:* Conchoidal. Hardness = 5 VHN = 424. D(meas.) = n.d. D(calc.) = 4.34

**Optical Properties:** Transparent to translucent. *Color:* Brownish yellow to reddish orange, brown in transmitted light; gray in reflected light. *Streak:* Light yellow. *Luster:* Adamantine to greasy. *Optical Class:* Isotropic.  $n > 1.9$   $n(\text{calc.}) = 2.06$   
 R: (400) 18.73, (420) 18.83, (440) 18.93, (460) 19.04, (470) 19.09, (480) 19.15, (500) 19.25, (520) 19.35, (540) 19.46, (546) 19.49, (560) 19.56, (580) 19.67, (589) 19.71, (600) 19.77, (620) 19.87, (640) 19.98, (650) 20.03, (660) 20.08, (680) 20.19, (700) 20.29

**Cell Data:** *Space Group:*  $Fd\bar{3}m$ .  $a = 10.4164(9)$   $Z = 8$

**X-ray Powder Pattern:** Bayan Obo REE deposit, Inner Mongolia, People's Republic of China. 3.017 (100), 1.843 (29), 2.613 (17), 1.571 (15), 6.040 (9), 1.503 (2), 1.302 (2)

<b>Chemistry:</b>	(1)		(1)
Na <sub>2</sub> O	6.30	TiO <sub>2</sub>	6.31
CaO	17.59	UO <sub>2</sub>	0.26
FeO	0.10	Nb <sub>2</sub> O <sub>5</sub>	61.36
SrO	0.85	F	4.76
PbO	0.24	ThO <sub>2</sub>	0.76
Ce <sub>2</sub> O <sub>3</sub>	2.51	ZrO <sub>2</sub>	0.51
La <sub>2</sub> O <sub>3</sub>	0.50	SnO <sub>2</sub>	0.30
Nd <sub>2</sub> O <sub>3</sub>	0.57	<u>-O = F<sub>2</sub></u>	<u>2.00</u>
Y <sub>2</sub> O <sub>3</sub>	0.42	Total	101.44

(1) Bayan Obo REE deposit, Inner Mongolia, People's Republic of China; average of 10 electron microprobe analyses supplemented by IR spectroscopy; corresponds to  $(\text{Ca}_{1.14}\text{Na}_{0.74}\text{Ce}_{0.06}\text{Sr}_{0.03}\text{Th}_{0.01}\text{Fe}_{0.01}\text{Y}_{0.01}\text{La}_{0.01}\text{Nd}_{0.01})_{\Sigma=2.02}(\text{Nb}_{1.68}\text{Ti}_{0.29}\text{Zr}_{0.02}\text{Sn}_{0.01})_{\Sigma=2.00}\text{O}_{6.00}(\text{F}_{0.92}\text{O}_{0.08})_{\Sigma=1.00}$ .

**Mineral Group:** Pyrochlore supergroup (general formula -  $A_2B_2X_6Y$ ); pyrochlore group ( $B = \text{Nb}^{5+}$ ).

**Occurrence:** In the dolomitic carbonatite.

**Association:** Dolomite, calcite, aegirine, riebeckite, diopside, fluorite, barite, phlogopite, rutile, britholite-(Ce), bastnäsite-(Ce), zircon, magnetite, pyrite, fersmite, columbite-(Fe), monazite-(Ce).

**Distribution:** From the Bayan Obo REE-niobium deposit, Inner Mongolia, People's Republic of China.

**Name:** For a member of the *pyrochlore* group with prefixes to indicate dominant fluorine (*fluor*) in the Y site and dominant calcium (*calcio*) in the A site.

**Type Material:** Geological Museum of China, Beijing, People's Republic of China (M12182).

**References:** (1) Guowu, L., Y. Guangming, L. Fude, X. Ming, G. Xiangkun, P. Baoming, and J. de Fourestier (2016) Fluorcalciopyrochlore, a new mineral species from Bayan Obo, Inner Mongolia, P.R. China. *Can. Mineral.*, 54(5), 1285-1291. (2) (2018) *Amer. Mineral.*, 103, 2045-2046 (abs. ref. 1). (3) Atencio, D., M.B. Andrade, A.G. Christy, R. Gieré, and P.M. Kartashov (2010) The pyrochlore supergroup of minerals: nomenclature. *Can. Mineral.*, 48, 673-698.