## Oxycalciopyrochlore $Ca_2Nb_2O_6O$

**Crystal Data:** Cubic; may be metamict. *Point Group:* $4/m\,\bar{3}\,2/m$. Rare rounded octahedra with small cube modifications, to 8 mm; commonly anhedral, granular, in veinlets and aggregates.

**Physical Properties:** *Fracture:* [Conchoidal to uneven] (by analogy to pyrochlore group). *Tenacity:* Brittle. Hardness = ~5 D(meas.) = 5.30 (on impure material). D(calc.) = 5.19

**Optical Properties:** Semitransparent. *Color:* Dark brown to brown-black; brown in transmitted light; medium gray in reflected light. *Streak:* Pale brown to cream. *Luster:* Vitreous. *Optical Class:* Isotropic. $n$ = > 1.78

**Cell Data:** *Space Group: Fd*$\bar{3}$ *m.* $a$ = 10.351 Z = 8

**X-ray Powder Pattern:** Věžná, Czech Republic; after heating at 700° C for one hour. 2.988 (10), 1.829 (6), 1.561 (5), 2.581 (4), 5.94 (3), 1.495 (3), 1.187 (3)

**Chemistry:**

| | (1) | | (1) |
|---|---|---|---|
| $Nb_2O_5$ | 21.6 | PbO | 0.13 |
| $Ta_2O_5$ | 19.3 | SnO | 2.9 |
| $TiO_2$ | 16.5 | CaO | 14.5 |
| $Al_2O_3$ | 0.49 | $Na_2O$ | 0.30 |
| $Sb_2O_3$ | 23.2 | F | 0.15 |
| FeO | 0.6 | $H_2O$ | 0.44 |
| MnO | 0.6 | $-O = F_2$ | 0.06 |
| | | Total | 100.65 |

(1) Věžná, Czech Republic; by electron and ion microprobe; total Sb as $Sb_2O_3$, Fe as FeO, Mn as MnO, Sn as SnO; corresponds to $(Ca_{1.11}Sb^{3+}_{0.69}Sn_{0.09}Fe_{0.04}Mn_{0.04}Na_{0.04})_{\Sigma=2.01}(Ti_{0.89}Nb_{0.70}Ta_{0.38}Al_{0.04})_{\Sigma=2.01}O_6[O_{0.76}(OH)_{0.21}F_{0.03}]_{\Sigma=1.00}$.

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

**Occurrence:** As replacement masses and in veinlets, in a granite pegmatite in a serpentinite.

**Association:** Columbite, niobian rutile, antimony, stokesite, cassiterite, zircon, albite.

**Distribution:** From Věžná, Czech Republic.

**Name**: For a member of the *pyrochlore* group with prefixes to indicate dominant oxygen (*oxy*) in the *Y* site and dominant calcium (*calcio*) in the *A* site. Formerly 'stibiobetafite'.

**Type Material:** University of Manitoba, Winnipeg (M5233); Royal Ontario Museum, Toronto, Canada (M35630).

**References:** (1) Černý, P., F.C. Hawthorne, J.H.G. Laflamme, and J.R. Hinthorne (1979) Stibiobetafite, a new member of the pyrochlore group from Vezná, Czechoslovakia. Can. Mineral., 17, 583-588. (2) (1981) Amer. Mineral., 66, 1278 (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.