Plumbopyrochlore $(Pb, Y, U, Ca)_{2-x}Nb_2O_6(OH)$

Crystal Data: Cubic. *Point Group:* $[4/m\ \bar{3}\ 2/m]$ (by analogy to the pyrochlore group). As octahedral crystals, granular, and rims on columbite crystals.

Physical Properties: *Fracture:* [Uneven.] *Tenacity:* [Brittle.] Hardness = [∼5]
D(meas.) = 5.04 D(calc.) = n.d.

Optical Properties: Semitransparent. *Color:* Red, greenish yellow, zoned with brown cores.
Luster: [Vitreous to resinous.]
Optical Class: Isotropic. n = 2.08–2.025

Cell Data: *Space Group:* $[Fd3m.]$ a = 10.534–10.57 Z = 8

X-ray Powder Pattern: Tai-Keu deposit, Russia.
3.02 (10), 1.861 (9), 1.581 (9), 1.077 (8), 1.017 (8), 1.209 (7), 2.615 (6)

Chemistry:

	(1)	(2)		(1)	(2)
UO_3	1.82		Al_2O_3	0.64	
WO_3		0.66	RE_2O_3	4.87	
Nb_2O_5	40.68	19.68	Fe_2O_3	2.87	0.42
Ta_2O_5	3.58	3.72	MnO		0.02
SiO_2	2.82		PbO	38.68	65.59
TiO_2	0.81	7.72	CaO	1.17	0.08
SnO_2	0.61	1.80	H_2O	1.00	
			Total	99.55	99.69

(1) Tai-Keu deposit, Russia; corresponding to $(Pb_{0.80}Y_{0.24}U_{0.10}Ca_{0.09})_{\Sigma=1.23}(Nb_{1.42}Si_{0.22}Fe_{0.17}Ta_{0.07}Al_{0.05}Sn_{0.02})_{\Sigma=1.95}O_{6.18}\bullet 0.52H_2O$. (2) Keivy massif, Russia; by electron microprobe, corresponding to $(Pb_{2.08}Ca_{0.01})_{\Sigma=2.09}(Nb_{1.05}Ti_{0.68}Ta_{0.12}Sn_{0.08}Fe_{0.04}W_{0.02})_{\Sigma=1.99}O_6(OH)$.

Mineral Group: Pyrochlore group and subgroup; $Pb_A > 20\%$; $(Nb + Ta)_B > 2Ti_B$; $Nb_B > Ta_B$.

Occurrence: In metasomatically altered granitic rocks (Ural Mountains, Russia).

Association: Quartz, microcline, albite, aegirine (Ural Mountains, Russia); plumbobetafite, columbite (Keivy massif, Russia).

Distribution: From the Tai-Keu RE–Nb deposit, between Vorkuta and Labytrangi, Polar Ural Mountains, and in the Keivy massif, Kola Peninsula, Russia. At Khan Bogda, Gobi Desert, Mongolia. In the Mt. Weld carbonatite, 35 km south of Laverton, Western Australia. At Oka, Quebec, Canada.

Name: For lead, PLUMBum, in its composition, and its relation to *pyrochlore*.

Type Material: Vernadsky Geological Museum, Moscow, 48596; A.E. Fersman Mineralogical Museum, Academy of Sciences, Moscow, Russia, 67255, 67256.

References: (1) Skorobogatova, N.V., G.A. Sidorenko, K.A. Dorofeeva, and T.I. Stolyarova (1966) Plumbopyrochlore. Geol. Mestorozhd. Redk. Elem., 30, 84–95 (in Russian). (2) (1970) Amer. Mineral., 55, 1068 (abs. ref. 1). (3) Hogarth, D.D. (1977) Classification and nomenclature of the pyrochlore group. Amer. Mineral., 62, 403–410. (4) Voloshin, A.V., Y.A. Pakhomovskii, and A.Y. Bakhchisaraytsev (1993) Plumbobetafite in amazonite pegmatites of western Keivy (Kola Peninsula). Mineral. Zhurnal, 15(2), 76–80 (in Russian with English abs.).