Keiviite-(Yb) $(Yb,Y)_2Si_2O_7$

Crystal Data: Monoclinic. *Point Group:* $2/m$. As elongated platy and prismatic crystals, to 0.8 mm. *Twinning:* Polysynthetic, common.

Physical Properties: *Cleavage:* Perfect on {110}, imperfect on {001}. Hardness = n.d. D(meas.) = 5.95 D(calc.) = 5.99 Faint green cathodoluminescence.

Optical Properties: Transparent. *Color:* Colorless. *Luster:* Vitreous. *Optical Class:* Biaxial (–). *Orientation:* $Z = b$; $X \wedge c = 3°$–$5°$; $Y \wedge a = 7°$–$8°$. *Dispersion:* $r < v$, strong. $\alpha = 1.723$ $\beta = 1.758$ $\gamma = 1.768$ 2V(meas.) = 58°

Cell Data: *Space Group:* $C2/m$. $a = 6.840(2)$ $b = 8.916(4)$ $c = 4.745(1)$ $\beta = 102.11(3)°$ Z = 2

X-ray Powder Pattern: Mt. Ploskaya, Russia; nearly identical to keiviite-(Y). 3.24 (10), 3.20 (10), 3.03 (9), 4.64 (8), 2.720 (7), 2.674 (7), 2.262 (7)

Chemistry:

	(1)	(2)
SiO_2	23.47	26.71
Y_2O_3	1.02	15.42
Gd_2O_3	0.06	0.15
Tb_2O_3	0.04	0.04
Dy_2O_3	1.23	3.86
Ho_2O_3	0.65	1.23
Er_2O_3	6.24	9.85
Tm_2O_3	3.10	3.19
Yb_2O_3	55.06	34.57
Lu_2O_3	8.97	5.22
FeO	0.00	0.09
CaO	0.03	0.07
Total	99.87	100.40

(1–2) Mt. Ploskaya, Russia; by electron microprobe; when averaged with three other intermediate analyses, corresponds to $(Yb_{1.43}Lu_{0.23}Er_{0.17}Tm_{0.08}Y_{0.05}Dy_{0.03}Ho_{0.02})_{\Sigma=2.01}Si_{1.99}O_7$.

Polymorphism & Series: Forms a series with keiviite-(Y).

Occurrence: In microcline-bearing pegmatites; two generations of the mineral are present.

Association: Fluorite, bastnäsite, hingganite, wulfenite.

Distribution: From Mt. Ploskaya, Keivy massif, Kola Peninsula, Russia.

Name: For Keivy on the Kola Peninsula, Russia, and *ytterbium* in its composition.

Type Material: Geology Museum, Kola Branch, Academy of Sciences, Apatity, 5769; Mining Institute, St. Petersburg, 1343/1; A.E. Fersman Mineralogical Museum, Academy of Sciences, Moscow, Russia, 82998.

References: (1) Voloshin, A.V., Y.A. Pakhomovskii, and F.N. Tyusheva (1983) Keiviite $Yb_2Si_2O_7$, a new ytterbium silicate from amazonitic pegmatites of the Kola Peninsula. Mineral. Zhurnal, 5(5), 94–99 (in Russian with English abs.). (2) (1984) Amer. Mineral., 69, 1191 (abs. ref. 1).