Pilawite-(Y) $Ca_2(Y,Yb)_2Al_4(SiO_4)_4O_2(OH)_2$

Crystal Data: Monoclinic. *Point Group*: 2/*m*. As crystals to 1.5 mm.

Physical Properties: *Cleavage*: None observed. *Fracture*: Irregular. *Tenacity*: Brittle. Hardness = 5 D(meas.) = n.d. D(calc.) = 4.007

Optical Properties: Translucent. *Color*: White. *Streak*: White. *Luster*: Vitreous. *Optical Class*: Biaxial (+). α = 1.743(5) β = 1.754(5) γ = 1.779(5) 2V(meas.) = 65(2)° 2V(calc.) = 68° *Orientation*: $X \wedge a = 87.5°$ (β acute), $Y \parallel b$ and $Z \wedge a = 3.1°$ (β obtuse).

Cell Data: *Space Group*: $P2_1/c$. a = 8.558(3) b = 7.260(3) c = 11.182(6) β = 90.61(4)° Z = 2

X-ray Powder Pattern: Piława Górna granitic pegmatite, southwestern Poland. 3.044 (100), 2.485 (62), 2.583 (54), 2.651 (46), 2.408 (45), 2.791 (43), 3.921 (38)

Chemistry:	(1)		(1)
P_2O_5	0.04	Er_2O_3	2.04
SiO_2	28.34	Tm_2O_3	0.34
TiO_2	0.26	Yb_2O_3	2.53
Al_2O_3	23.36	Lu_2O_3	0.47
Fe_2O_3	0.72	FeO	0.32
Y_2O_3	22.17	MnO	0.75
Gd_2O_3	0.50	CaO	12.50
Tb_2O_3	0.21	PbO	0.18
Dy_2O_3	2.13	H_2O	[2.14]
Ho_2O_3	0.54	Total	99.55

(1) Piława Górna granitic pegmatite, southwestern Poland; average of 33 electron microprobe analyses of compositionally-zoned crystals, supplemented by FTIR and RAMAN spectroscopy, H_2O from stoichiometry, Fe^{3+}/Fe^{2+} to maintain 12 cations pfu; corresponding to $(Ca_{1.88}Mn^{2+}_{0.09}Fe^{2+}_{0.04}Pb_{0.01})_{\Sigma=2.02}(Y_{1.65}Yb_{0.11}Dy_{0.10}Er_{0.09}Gd_{0.02}Ho_{0.02}Tm_{0.02}Lu_{0.02}Tb_{0.01})_{\Sigma=2.04}$ $[(Al_{3.86}Fe^{3+}_{0.08}Ti^{4+}_{0.03})_{\Sigma=3.97}(Si_{3.98}O_4)_4O_2(OH)_2]$.

Occurrence: Within the blocky feldspar zone of a weakly zoned and weakly fractionated NYF-affiliated granitic pegmatite dike.

Association: Keiviite-(Y), gadolinite-(Y), hingganite-(Y), hellandite-(Y).

Distribution: From the quarry of the Dolnośląskie Surowce Skalne S.A Company, Piława Górna, ~50 km southwest of Wrocław, Lower Silesia, southwestern Poland.

Name: For *Piław*a Górna, in Lower Silesia, Poland.

Type Material: Mineralogical Museum, University of Wrocław, Poland (MMWr IV7676).

References: (1) Pieczka, A., F.C. Hawthorne, M.A. Cooper, E. Szełęg, A. Szuszkiewicz, K. Turniak, K. Nejbert and S. Ilnicki (2015) Pilawite-(Y), $Ca_2(Y,Yb)_2[Al_4(SiO_4)_4O_2(OH)_2]$, a new mineral from the Piława Górna granitic pegmatite, southwestern Poland: mineralogical data, crystal structure and association. Mineral. Mag., 79(5), 1143-1157. (2) (2016) Amer. Mineral., 101, 2129-2130 (abs. ref. 1).