Paraumbite $K_3Zr_2HSi_6O_{18}\cdot nH_2O$

Crystal Data: Orthorhombic. *Point Group:* $mm2$. Equant crystals, to 1 mm; massive.

Physical Properties: *Cleavage:* {010}, perfect micaceous; {100} and {110}, less perfect. *Fracture:* Uneven. Hardness = ~4.5 VHN = 280–504, 384 average. D(meas.) = 2.59 D(calc.) = 2.92

Optical Properties: Translucent to transparent. *Color:* Colorless to white, gray, pale green. *Streak:* White. *Luster:* Vitreous, pearly on cleavages.
Optical Class: Biaxial (–). *Orientation:* $X = c$; $Y = b$; $Z = a$. $\alpha = 1.588(2)$ $\beta = 1.601(2)$ $\gamma = 1.610(2)$ 2V(meas.) = 82°

Cell Data: *Space Group:* $P2cm$. a = 10.34–10.39 b = 13.25–13.29 c = 14.55–14.57 Z = 4

X-ray Powder Pattern: Khibiny massif, Russia.
5.95 (10b), 3.01 (9b), 6.46 (8), 3.47 (7), 2.90 (7), 2.56 (6), 4.06 (6b)

Chemistry:

	(1)
SiO_2	39.58
TiO_2	0.89
ZrO_2	27.87
HfO_2	0.32
Fe_2O_3	0.10
CaO	0.00
Na_2O	0.12
K_2O	15.39
H_2O	[15.73]
Total	[100.00]

(1) Khibiny massif, Russia; by electron microprobe, H_2O by difference; corresponds to $(K_{2.92}Na_{0.03})_{\Sigma=2.95}(Zr_{2.02}Ti_{0.10}Hf_{0.01}Fe_{0.01})_{\Sigma=2.14}Si_{5.89}O_{18}H_{0.94}\cdot 7.34H_2O$.

Occurrence: Replacing wadeite in a pegmatite in a differentiated alkalic massif (Khibiny massif, Russia); in altered pegmatite and sodalite xenoliths in an intrusive alkalic gabbro-syenite complex (Mont Saint-Hilaire, Canada).

Association: Eudialyte, wadeite, gaidonnayite, natrolite, pectolite, potassic feldspar (Khibiny massif, Russia); gaidonnayite (Mont Saint-Hilaire, Canada).

Distribution: On Mt. Eveslogchorr, Khibiny massif, Kola Peninsula, Russia. At Mont Saint-Hilaire, Quebec, Canada.

Name: From the Greek *para*, for *near*, and its relation to *umbite*.

Type Material: Geology Museum, Kola Branch, Academy of Sciences, Apatity, 5842, 5843; Mineralogical Museum, St. Petersburg University, St. Petersburg, 17065; Mining Institute, St. Petersburg, 1630/1; Il'menskii Preserve Museum, Miass, 13095vr; A.E. Fersman Mineralogical Museum, Academy of Sciences, Moscow, Russia, 82760, vis3464, vis4544, vis4545, vis5045.

References: (1) Khomyakov, A.P., A.A. Voronkov, Y.S. Kobyashev, and L.I. Polezhaeva (1983) Umbite and paraumbite, new potassium zirconosilicates from the Khibina alkalic massif. Zap. Vses. Mineral. Obshch., 112, 461–469 (in Russian). (2) (1984) Amer. Mineral., 69, 813–814 (abs. ref. 1).