Priderite $(K, Ba)(Ti, Fe^{3+})_8O_{16}$

Crystal Data: Tetragonal. *Point Group:* $4/m$. Rectangular prismatic to tabular crystals, to 1 cm.

Physical Properties: *Cleavage:* {001}, perfect; another, perpendicular, fair. *Fracture:* Conchoidal. Hardness = n.d. VHN = 161 D(meas.) = 3.86(8) D(calc.) = 3.948 Weakly paramagnetic.

Optical Properties: Semitransparent. *Color:* Black; yellowish brown in thin section. *Streak:* Gray. *Luster:* Adamantine. *Optical Class:* Uniaxial (+). *Pleochroism:* O = deep reddish brown; E = deep reddish brown to black. $\omega = > 2.10$ ϵ = n.d.

Cell Data: *Space Group:* $I4/m$. $a = 10.139(2)$ $c = 2.9664(9)$ Z = 1

X-ray Powder Pattern: West Kimberley area, Australia. 3.19 (s), 7.13 (m), 5.04 (m), 2.470 (m), 1.887 (m), 1.585 (mw), 2.222 (w)

Chemistry:	(1)	(2)	(3)		(1)	(2)	(3)
TiO_2	70.6	74.75	72.00	BaO	6.7	7.54	15.00
Al_2O_3	2.3	0.05	0.60	SrO		0.00	
Fe_2O_3	12.4	11.57	11.40	Na_2O	0.6	0.27	0.40
MgO	0.0	1.44		K_2O	5.6	5.94	0.40
CaO	trace			Total	98.2	101.57	99.80

(1) West Kimberley area, Australia; corresponds to $(K_{0.87}Ba_{0.32}Na_{0.14})_{\Sigma=1.33}(Ti_{6.48}Fe^{3+}_{1.14}Al_{0.33})_{\Sigma=7.95}O_{16}$. (2) Do.; by electron microprobe, total Fe as Fe_2O_3; corresponding to $(K_{0.90}Ba_{0.35}Na_{0.06})_{\Sigma=1.31}(Ti_{6.68}Fe^{3+}_{1.03}Mg_{0.25}Al_{0.01})_{\Sigma=7.97}O_{16}$. (3) Kovdor massif, Russia; by electron microprobe, total Fe as Fe_2O_3; corresponds to $(Ba_{0.66}Na_{0.16}K_{0.11})_{\Sigma=0.93}(Ti_{6.05}Fe^{3+}_{1.90}Al_{0.16})_{\Sigma=8.11}O_{16}$.

Mineral Group: Cryptomelane group.

Occurrence: In some ultrapotassic lamproites, ultramafics, and carbonatites.

Association: Leucite, potassian richterite, titanian phlogopite, jeppeite, shcherbakovite, wadeite, perovskite, apatite (West Kimberley area, Australia); potassian feldspar, phlogopite, potassian richterite, olivine, titanite, anatase, ilmenite, calcite (Corsica, France).

Distribution: From the Kimberley district, Western Australia, as in the Wolgidee Hills and the Argyle diamond mine. In the USA, from the Leucite Hills, Sweetwater Co., Wyoming; at Smoky Butte, Garfield Co., Montana; and in the Prairie Creek diatreme, near Murfreesboro, Pike Co., Arkansas. On the island of Corsica, France, near Sisco, north of Bastia. From the Sisimiut area, west Greenland. In the Kovdor and Khibiny massifs, Kola Peninsula, Russia.

Name: For Rex Tregilgas Prider (1910–), Professor of Geology, University of Western Australia, Perth, Australia, who provided the first pure sample of the species.

Type Material: University of Western Australia, Perth, Australia, 18760; The Natural History Museum, London, England.

References: (1) Norrish, K. (1951) Priderite, a new mineral from the leucite-lamproites of the west Kimberley area, Western Australia. Mineral. Mag., 29, 496–501. (2) (1951) Amer. Mineral., 36, 793 (abs. ref. 1). (3) Velde, D. (1968) A new occurrence of priderite. Mineral. Mag., 36, 867–870. (4) Zhuravleva, L.N., K.V. Yurkina, and E.G. Ryabeva (1978) Priderite – first find in the USSR. Doklady Acad. Nauk SSSR, 239, 435–438 (in Russian). (5) Post, J.E., R.B. Von Dreele, and P.R. Buseck (1982) Symmetry and cation displacements in hollandites: structure refinements of hollandite, cryptomelane, and priderite. Acta Cryst., 38, 1056–1065. (6) Birch, W.D. (1985) A note on large crystals of priderite, jeppeite, wadeite and other minerals from Walgidee [*sic*] Hills, Western Australia. Aust. Mineral., 1(50), 298–302.