Ferrokentbrooksite

\[ \text{Na}_{15}\text{CaFe}^{2+}_{3}\text{Zr}_{3}\text{Nb}(\text{Si}_{25}\text{O}_{73})(\text{O, OH, H}_2\text{O})_3(\text{F, Cl})_2 \]

Crystal Data: Hexagonal. \textit{Point Group}: 3m. As pseudo-octahedral crystals to ∼1 cm, that display \{001\}, \{10\}, \{012\}, with minor \{02\} and \{110\}.


Optical Class: Uniaxial (-). \( \omega = 1.6221(3) \) \( v = 1.6186(3) \) Can be anomalously biaxial with 2V(meas.) = ∼5°.

Cell Data: Space Group: R\( \text{3m} \). \( a = 14.2099(7) \) \( c = 30.067(2) \) \( Z = 3 \)

X-ray Powder Pattern: Poudrette quarry, Mont Saint-Hilaire, Rouville County, Quebec, Canada. 2.968 (100), 2.847 (98), 3.391 (51), 5.694 (50), 4.300 (43), 7.104 (38), 3.955 (31)

Chemistry:

\[
\begin{array}{ccc}
\text{Na}_2\text{O} & 11.96 & \text{Gd}_2\text{O}_3 \\
\text{K}_2\text{O} & 0.44 & \text{Si}_2\text{O}_5 \\
\text{CaO} & 7.99 & \text{Ti}_2\text{O}_5 \\
\text{MnO} & 3.88 & \text{Zr}_2\text{O}_5 \\
\text{FeO} & 5.08 & \text{Hf}_2\text{O}_5 \\
\text{SrO} & 0.45 & \text{Nb}_2\text{O}_5 \\
\text{Al}_2\text{O}_3 & 0.11 & \text{Ta}_2\text{O}_5 \\
\text{Y}_2\text{O}_3 & 0.58 & \text{F} \\
\text{La}_2\text{O}_3 & 1.51 & \text{Cl} \\
\text{Ce}_2\text{O}_3 & 2.51 & \text{H}_2\text{O} \\
\text{Nd}_2\text{O}_3 & 0.53 & \text{Si}_2\text{O}_5 \\
\text{Sm}_2\text{O}_3 & 0.11 & \text{Total} \\
\end{array}
\]

(1) Poudrette quarry, Mont Saint-Hilaire, Rouville County, Quebec, Canada; average electron microprobe analysis, H\(_2\)O calculated; corresponding to (Na\(_{13}\)REE\(_{0.09}\)K\(_{0.23}\)Ca\(_{0.22}\)Si\(_{0.15}\))\(\Sigma=14.74\) (Ca\(_{4.56}\)Mn\(_{1.24}\)Y\(_{0.17}\))\(\Sigma=6.00\)(Fe\(_{23.39}\)Mn\(_{0.61}\))\(\Sigma=3.06\)(Zr\(_{3.00}\)Ti\(_{0.04}\)Hf\(_{0.03}\))\(\Sigma=1.07\)(Nb\(_{0.61}\)Si\(_{0.25}\)Zr\(_{0.07}\)Ta\(_{0.02}\))\(\Sigma=0.96\)(Si\(_{24.93}\)Al\(_{0.07}\))\(\Sigma=25.00\)(O,OH,H\(_2\)O)\(\Sigma=2.47\)(Cl\(_{0.87}\)F\(_{0.71}\))(OH\(_{0.40}\))\(\Sigma=2.00\)

Mineral Group: Eudialyte group.

Occurrence: A late-stage phase in agpaitic pegmatite dikes in nepheline syenite associated with an alkaline intrusive complex.

Association: Microcline, nepheline (partly altered to natrolite), fluorite, fluoroapatite, natrolite, gonnardite, rhodochrosite, aegirine, albite, calcite, sérandite, ancyliite-(Ce), catapleiite.

Distribution: From Poudrette quarry, Mont Saint-Hilaire, Rouville County, Quebec, Canada [TL]. From the Narsârssuk pegmatite, Igaliko alkaline complex, southwestern Greenland. In Norway, from the Langesundfjord area, at Brônebukta, Siktesøya; Barkevik Strand; and the Bjørndalen quarry, Tvedalen, also at Kariåsen in the Sandefjord area. In the Burpala alkaline complex, Baikal area, Russia.

Name: A prefix, ferro, indicates the Fe\(^{2+}\)-dominant analog of kentbrooksite.

Type Material: Canadian Museum of Nature, Ottawa, Ontario (CMNMC 81563).