Feruvite  \((\text{Ca,Na})(\text{Fe}^{2+},\text{Mg})_3(\text{Al, Mg})_6(\text{BO}_3)_3\text{Si}_6\text{O}_{18}(\text{OH})_4)\)

Crystal Data:  Hexagonal.  Point Group:  \(3m\). Subhedral to anhedral grains, to 2 mm.

Physical Properties:  Fracture: Conchoidal.  Tenacity: Brittle.  Hardness \(\sim 7\)
\(D(\text{meas.}) = 3.207(9)\) \(D(\text{calc.}) = 3.21\)

Luster: Vitreous to dull.
Optical Class: Uniaxial (−).
\(\omega = 1.687(1)\) \(\epsilon = 1.669(1)\)

Cell Data:  Space Group: \(R\bar{3}m\).  \(a = 16.012(2)\) \(c = 7.245(2)\) \(Z = 3\)

X-ray Powder Pattern:  Cuvier Island, New Zealand.
2.586 (100), 2.979 (80), 4.24 (60), 4.00 (60), 3.50 (60), 2.051 (50), 6.43 (40)

Chemistry:

\begin{align*}
\text{SiO}_2 & \quad 33.33 & 33.33 \\
\text{TiO}_2 & \quad 2.19 & 2.19 \\
\text{B}_2\text{O}_3 & \quad 11.25 & [9.93] \\
\text{Al}_2\text{O}_3 & \quad 23.38 & 23.38 \\
\text{Fe}_2\text{O}_3 & \quad [2.56] \\
\text{FeO} & \quad 13.56 & [11.26] \\
\text{MnO} & \quad 0.07 & 0.07 \\
\text{MgO} & \quad 7.80 & 7.80 \\
\text{CaO} & \quad 3.30 & 3.30 \\
\text{Na}_2\text{O} & \quad 1.16 & 1.16 \\
\text{K}_2\text{O} & \quad 0.05 & 0.05 \\
\text{H}_2\text{O} & \quad [3.48] & [3.43]
\end{align*}

Total \([99.57] [98.46]\)

(1) Cuvier Island, New Zealand; by electron microprobe, average of five analyses, total Fe as FeO, H\(_2\)O calculated from stoichiometry. (2) Do.; B\(_2\)O\(_3\), Fe\(_2\)O\(_3\), FeO, and H\(_2\)O calculated from stoichiometry, original total given as 98.45%; corresponding to \((\text{Ca}_{0.62}\text{Na}_{0.39}\text{K}_{0.01})\Sigma=1.02(\text{Fe}^{2+}_{1.53}\text{Mg}_{1.21}\text{Ti}_{0.29}\text{Mn}_{0.01})\Sigma=3.94(\text{Al}_{4.72}\text{Mg}_{0.82}\text{Fe}^{3+}_{0.34}\text{Fe}^{2+}_{0.12})\Sigma=6.00(\text{BO}_3)_3(\text{Si}_{5.83}\text{Al}_{0.10})\Sigma=5.93\text{O}_{18}(\text{OH})_4\).

Mineral Group:  Tourmaline group.

Occurrence:  By hydrothermal replacement of silicates in a pegmatitic rock.

Association:  Dravite, quartz, microcline, chlorapatite, pyrite.

Distribution:  On Cuvier Island, New Zealand.

Name:  For iron (FERrum), in the formula and the similarity to uvite.

Type Material:  Canadian Museum of Nature, Ottawa, Canada.