Emeleusite  \( \text{Na}_4\text{Li}_2\text{Fe}^{3+}_2\text{Si}_{12}\text{O}_{30} \)

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Crystal Data:  Orthorhombic, pseudohexagonal.  \textit{Point Group:}  \(2/m 2/m 2/m\).  Euhedral crystals, tabular \(\{010\}\) and elongated along \(\{100\}\), to 2 mm; in pseudohexagonal twins; as equidimensional grains.  \textit{Twinning:}  Interpenetration triplets with \(\{110\}\) as twin plane.

Physical Properties:  Hardness = 5–6  \(D(\text{meas.}) = 2.76(7)\)  \(D(\text{calc.}) = 2.81\)

Optical Properties:  Transparent.  \textit{Color:}  Colorless to creamy pinkish.  \textit{Luster:}  Vitreous.  \textit{Optical Class:}  Biaxial (−).  \textit{Orientation:}  \(X = b; Y = a; Z = c\).  \textit{Dispersion:}  \(r > v\), very strong.  \(\alpha = 1.596(1)\)  \(\beta = 1.597(1)\)  \(\gamma = 1.597(1)\)  \(2V(\text{meas.}) = 0°–30°\)

Cell Data:  \textit{Space Group:}  \(\text{Acam}\).  \(a = 10.072(3)\)  \(b = 17.337(6)\)  \(c = 14.004(3)\)  \(Z = 8\)

X-ray Powder Pattern:  Island of Igdlutalik, Greenland.  
4.352 (100), 3.209 (80), 3.501 (70), 3.090 (70), 4.087 (60), 3.192 (60), 2.875 (60)

Chemistry:

\[
\begin{align*}
\text{SiO}_2 & \quad 70.75 \\
\text{TiO}_2 & \quad 0.55 \\
\text{ZrO}_2 & \quad 0.10 \\
\text{Al}_2\text{O}_3 & \quad 1.34 \\
\text{Fe}_2\text{O}_3 & \quad 12.13 \\
\text{MnO} & \quad 0.03 \\
\text{MgO} & \quad 0.10 \\
\text{CaO} & \quad 0.00 \\
\text{Li}_2\text{O} & \quad 2.78 \\
\text{Na}_2\text{O} & \quad 11.98 \\
\text{K}_2\text{O} & \quad 0.00 \\
\hline
\text{Total} & \quad 99.76
\end{align*}
\]

(1) Island of Igdlutalik, Greenland; by electron microprobe, Li by flame photometry; corresponds to \(\text{Na}_{3.96}\text{Li}_{1.91}(\text{Fe}^{3+}_{1.56}\text{Al}_{0.27}\text{Ti}_{0.07}\text{Mg}_{0.05}\text{Zr}_{0.01})\Sigma=1.94\text{Si}_{12.05}\text{O}_{30}\).

Mineral Group:  Milarite group.

Occurrence:  A minor constituent of a peralkalic trachyte dike, in flow-banded aegirine-albite-rich layers.

Association:  Albite, aegirine, quartz, riebeckite, micas, zircon, pectolite, apatite, calcite, titanian narsarsukite, zinncian nordite, thorite, opaque oxides.

Distribution:  On the Island of Igdlutalik, Julianehåb district, Greenland.

Name:  To honor Dr. Charles Henry Emeleus, University of Durham, Durham, England.


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