Eckermannite

\[ \text{NaNa}_2(\text{Mg}_4\text{Al})\text{Si}_8\text{O}_{22}(\text{OH})_2 \]

Crystal Data: Monoclinic.  \textit{Point Group}: \(2/m\).  As elongated prismatic crystals to 1 mm.

Physical Properties: \textit{Cleavage}: Perfect on \{110\}, intersecting at 56° and 124°; [parting on \{010\}].
\textit{Fracture}: [Uneven.]
\textit{Tenacity}: [Brittle.]
\textit{Hardness}: = 5-6
\textit{D(meas.)}: = n.d.
\textit{D(calc.)}: = 3.02

Optical Properties: \textit{Transparent.}
\textit{Color}: Colorless to gray.
\textit{Luster}: [Vitreous.]
\textit{Optical Class}: Biaxial (-).
\(\alpha = 1.605(2)\)
\(\beta = 1.630(2)\)
\(\gamma = 1.634(2)\)
\(2V(\text{meas.}) = 40.0(5)°\)
\(2V(\text{calc.}) = 43°\)

Pleochroism: \(X\) = medium gray; \(Y\) = pale gray to colorless; \(Z\) = light gray.
\textit{Absorption}: \(X > Z > Y\).

Orientation: \(Y = b; X^{\alpha} = 23.8° \text{ (in } \beta \text{ obtuse)}; Z^{\alpha} = 10.1° \text{ (in } \beta \text{ acute).}
\textit{Dispersion}: n.d.

Cell Data: \textit{Space Group}: \(C2/m\): \(a = 9.8087(7)\)
\(b = 17.8448(13)\)
\(c = 5.2905(4)\)
\(\beta = 103.660(1)°\)
\(Z = 2\)

X-ray Powder Pattern: Jade Mine Tract, Kachin Province, Myanmar.
2.702 (100), 3.395 (59), 3.128 (56), 2.525 (56) 8.407 (42), 2.574 (36) 3.257 (34)

Chemistry:

\[
\begin{array}{cccc}
\text{SiO}_2 & 59.30 & 59.80 & \text{CaO} \\
\text{TiO}_2 & 0.03 & & 10.56 \\
\text{Al}_2\text{O}_3 & 3.89 & 6.34 & \text{K}_2\text{O} \\
\text{Fe}_2\text{O}_3 & 3.78 & & 0.32 \\
\text{FeO} & [0.80] & -\text{O = }\text{F}_2 & 0.03 \\
\text{MnO} & 0.07 & & [2.19] \\
\text{MgO} & 19.25 & 20.05 & \text{Total} \\
\end{array}
\]

(1) Jade Mine Tract, Kachin Province, Myanmar; average of 10 electron microprobe analyses, \(\text{H}_2\text{O}\) and \(\text{FeO}\) calculated; corresponds to \(4(\text{Na}_{0.87}\text{K}_{0.06})\text{Si}_8\text{O}_{22}(\text{OH})_2\) for jadeitite.

Polymorphism & Series: Forms a series with ferro-eckermannite.

Mineral Group: Amphibole supergroup, sodium amphibole.

Occurrence: In a jadeitite-amphibole fels rock, likely formed under blueschist facies conditions.

Association: Jadeite, albite.

Distribution: From the Jade Mine Tract, Kachin Province, Myanmar.

Name: Honors Professor Claes Walther (Harry) von Eckermann (1886-1969), petrologist, Stockholm, Sweden.

Type Material: American Museum of Natural History, New York, New York, USA (108401).