Melkovite

\[
\text{CaFe}^{3+}_{2}\text{Mo5O}_{10}(\text{PO}_{4})_{2}(\text{OH})_{12}\cdot8\text{H}_2\text{O}
\]

Crystal Data: Monoclinic. \textit{Point Group}: 2/m. Crystals are pseudohexagonal, very thin, platy, to 2 \(\mu\)m, in powdery aggregates in veinlets.

Physical Properties: \textit{Cleavage}: One, perfect. \textit{Tenacity}: Brittle. Hardness = \(\sim 3\)
\(\text{D(meas.)} = 2.969-2.973\) \(\text{D(calc.)} = 2.851\)


Cell Data: \textit{Space Group}: \textit{C2/m}. \(a = 18.81(9)\) \(b = 10.99(10)\) \(c = 15.11(9)\) \(\beta = 129.6(2)\) \(Z = 2\)

X-ray Powder Pattern: Shunak Mountains, Kazakhstan.
2.916 (9), 3.537 (8), 8.42 (7), 3.036 (7), 1.789 (7), 1.992 (6), 2.415 (5)

Chemistry:

\begin{align*}
\text{Na}_2\text{O} & \quad 0.77 & \text{SiO}_2 & \quad 0.19 \\
\text{K}_2\text{O} & \quad 0.17 & \text{P}_2\text{O}_5 & \quad 5.97 \\
\text{CaO} & \quad 6.15 & \text{As}_2\text{O}_3 & \quad 0.07 \\
\text{CuO} & \quad 0.06 & \text{MoO}_3 & \quad 55.72 \\
\text{Fe}_2\text{O}_3 & \quad 10.37 & \text{H}_2\text{O} & \quad [20.52] \\
\text{Al}_2\text{O}_3 & \quad 0.01 & \text{Total} & \quad 100.00
\end{align*}

(1) Shunak Mountains, Kazakhstan; normalized electron microprobe analysis, H\(_2\)O calculated, corresponds to \([\text{Ca}_{1.27}\text{Na}_{0.51}\text{K}_{0.07}\text{Cu}^{2+}_{0.02}]_{\Sigma = 1.87}(\text{H}_2\text{O})_{15.13}\text{Ca}(\text{H}_2\text{O})_6]_{\Sigma = 1.83}\text{Fe}^{3+}_{2.68}\text{O}_{33.17}(\text{OH})_{3.83}\].

Mineral Group: Betpakdalite supergroup, mendozavilite group.

Occurrence: Localized along joints in sandstone, formed by alteration of molybdenite in the oxidized zone of small molybdenite-fluorite deposits.

Association: Fluorite, molybdenite, magnetite, powellite, ferrimolybdate, iriginite, jarosite.

Distribution: In the Shunak Mountains, 60 km west of the Mointy railroad station, Kazakhstan [TL]. At Su Senargiu, Sardinia, Italy.

Name: Honors Professor Vyacheslav Gavrilovich Melkov (1911-1991), Russian mineralogist specializing in uranium minerals, of the All-Union Research Institute of Mineral Resources, Moscow, Russia. Existing name retained instead of ‘mendozavilite-CaCa’ by group nomenclature.

Type Material: A.E. Fersman Mineralogical Museum, Academy of Sciences, Moscow, Russia, 72716; National Museum of Natural History, Washington, D.C., USA, 160237.