Campigliaite

\[ \text{Cu}_4\text{Mn}^{2+}(\text{SO}_4)_2(\text{OH})_6\cdot4\text{H}_2\text{O} \]

Crystal Data: Monoclinic. Point Group: 2. In tufts of crystals, elongated along [010], bladed on \{100\}, to 0.2 mm. Twinning: Polysynthetic, with \{100\} as twin plane, ubiquitous.

Physical Properties: Cleavage: On \{100\}, perfect. Hardness = n.d. D(meas.) = 3.0
D(calc.) = 3.063

Optical Class: Biaxial (−). Orientation: X \simeq a; Y \simeq c; Z = b. Dispersion: r < v, weak.
\[ \alpha = 1.589 \quad \beta = 1.645 \quad \gamma = 1.659 \quad 2V(\text{meas.}) = 52^\circ \]

Cell Data: Space Group: \text{C}2. \[ a = 21.725(8) \quad b = 6.118(6) \quad c = 11.233(7) \quad \beta = 100.40(5)^\circ \]
Z = 4

X-ray Powder Pattern: Temperino mine, Italy.
10.68 (100), 5.34 (60), 3.56 (44), 2.673 (5), 2.768 (2), 2.570 (2), 1.781 (2)

Chemistry:

\[
\begin{array}{ccc}
\text{SO}_3 & \text{MnO} & \text{CuO} \\
20.15 & 9.95 & 40.60 \\
23.71 & 10.50 & 47.11 \\
\end{array}
\]

\[
\begin{array}{ccc}
\text{ZnO} & \text{H}_2\text{O} \\
4.47 & [24.83] \\
\end{array}
\]

\[
\begin{array}{ccc}
\text{Total} & \text{[100.00]} & 100.00 \\
\end{array}
\]

(1) Temperino mine, Italy; by electron microprobe, average of three analyses, total Mn as MnO, H$_2$O by difference; corresponds to (Cu$_{4.62}$Zn$_{0.38}$)$_{\Sigma=\text{4.01}}$Mn$_{0.99}$(SO$_4$)$_{1.78}$(OH)$_{6.44}$•6.55H$_2$O.
(2) Cu$_4$Mn(SO$_4$)$_2$(OH)$_6$•4H$_2$O.

Occurrence: A rare secondary mineral in the oxidized zone of a metallic sulfide skarn deposit.

Association: Gypsum, brochantite, antlerite.

Distribution: From the Temperino mine, Campiglia Marittima, Tuscany, Italy.

Name: For the locality which provided the first specimens, Campiglia Marittima, Italy.
