Liebauite

\( \text{Ca}_3\text{Cu}_5\text{Si}_9\text{O}_{26} \)

Crystal Data: Monoclinic.  Point Group: \( 2/m \). As crystals, to \( < 0.03 \) mm.


Optical Class: Biaxial (+). \( \alpha = 1.722(1) \quad \beta = 1.723(1) \quad \gamma = 1.734(1) \quad 2V(\text{meas.}) = 72.8^\circ \)

Cell Data:  Space Group: \( C2/c \). \( a = 10.160(1) \quad b = 10.001(1) \quad c = 19.973(2) \)
\( \beta = 91.56(1)^\circ \quad Z = 4 \)

X-ray Powder Pattern:  Sattelberg volcano, Germany. 3.00 (100), 3.12 (90), 6.70 (70), 2.41 (70), 7.13 (60), 2.45 (60), 1.78 (50)

Chemistry:

\[
\begin{array}{ll}
\text{SiO}_2 & 48.5 \\
\text{CuO} & 34.9 \\
\text{CaO} & 15.0 \\
\text{Total} & 98.4 \\
\end{array}
\]

(1) Sattelberg volcano, Germany; by electron microprobe, average of six analyses; corresponding to \( \text{Ca}_{2.99}\text{Cu}_{4.91}\text{Si}_{9.05}\text{O}_{26} \).

Occurrence: In cavities in argillaceous sedimentary xenoliths subjected to very high-grade thermal metamorphism.

Association: Cuprorivaite, tenorite, volborthite, calciovolborthite.

Distribution: In Germany, at the Sattelberg and Nickenicher Sattel volcanos and the Emmelberg cone, near Kruft, Eifel district.

Name: For Dr. Friedrich Liebau, Kiel, Germany, prominent worker on silicate minerals.

Type Material: University of Würzburg, Würzburg; and University of Kiel, Kiel, Germany.