Calvertite

\[ \text{Cu}_5\text{Ge}_{0.5}\text{S}_4 \]

**Crystal Data**: Isometric.  \textit{Point Group}: n.d.  As anhedral, elongate to elliptical grains, to 100 μm.


**Cell Data**:  \textit{Space Group}: \textit{Fm\text{3}m}, \textit{F}_{432}, or \textit{F}_{4-3m}.  \textit{a} = 5.337(1)  \textit{Z} = 1

Metastable and highly disordered; the ordered equivalent would be \textit{Cu}_{10}\textit{GeS}_{8} with \textit{a} = 2 \times 5.337 Å.

**X-ray Powder Pattern**:  Tsumeb mine, Namibia.  (Although matching the pattern for synthetic material, these 4 lines are not definitive as they match strong lines for reinerite, germanocolusite, and germanite).

3.053 (100), 1.869 (90), 1.595 (30), 2.639 (10)

**Chemistry**:  \begin{align*}
\text{Cu} & \quad 63.10 \\
\text{Fe} & \quad 1.66 \\
\text{Zn} & \quad 0.55 \\
\text{Ge} & \quad 5.67 \\
\text{As} & \quad 1.50 \\
\text{Ga} & \quad 0.36 \\
\text{V} & \quad 0.05 \\
\text{S} & \quad 26.63 \\
\text{Total} & \quad 99.60
\end{align*}

(1) Tsumeb mine, Namibia; average of 8 electron microprobe analyses, corresponding to
\((\text{Cu}_{4.782}\text{Fe}_{0.143}\text{Zn}_{0.041}\text{Ga}_{0.025}\text{V}_{0.005})_{0.996}(\text{Ge}_{0.382}\text{As}_{0.096})_{0.478}\text{S}_{4}.\)

**Occurrence**: In a highly oxidized, polymetallic, fractured and brecciated dolomite and sandstone pipe.

**Association**: Reinerite, tennantite, gallite, chalcocite.

**Distribution**: Tsumeb mine, Namibia.

**Name**: Honors Lauriston (Larry) Derwent Calvert (1924–1993) of the National Research Council, Ottawa, Canada for his studies of metallic phases and contributions to the Powder Diffraction File (ICDD).
