Crystal Data: Hexagonal (synthetic).  Point Group: \( \overline{3} 2/m \). Fine-grained crystalline, massive, as crusts, to 2 mm thick.

Physical Properties:  Hardness = 4  \( D(\text{meas.}) = 5.85(7) \)  \( D(\text{calc.}) = 5.772 \)

Optical Class:  [Uniaxial.]  \( \omega = \text{n.d.} \)  \( \epsilon = \text{n.d.} \)

Cell Data:  \( \text{Space Group: } R\overline{3}m \) (synthetic).  \( a = 5.9511(5) \)  \( c = 27.5676(20) \)  \( Z = 1 \)

X-ray Powder Pattern:  Johanngeorgenstadt, Germany.  2.060 (vvs), 3.76 (vs), 2.329 (s), 5.05 (s), 2.862 (s), 2.492 (s), 1.485 (s)

Chemistry:

\[
\begin{array}{cccc}
P_2O_5 & 0.14 & (1) & (2) \\
As_2O_5 & 36.57 & 36.3 & 37.6 & 35.19 \\
Bi_2O_3 & 0.24 & & & \\
Fe_2O_3 & \text{trace} & & & \\
FeO & 1.3 & 0.6 & & \\
CoO & 0.54 & 1.2 & 0.7 & \\
NiO & 62.07 & 60.9 & 61.3 & 64.81 \\
CuO & 0.34 & 0.3 & 0.7 & \\
\text{Total} & 99.90 & [100.0] & 100.9 & 100.00 \\
\end{array}
\]

(1) Johanngeorgenstadt, Germany.  (2) Do.; total Fe as FeO, recalculated after deduction of quartz 13.9%; corresponds to \( \text{Ni}_{15.9}\text{Fe}_{0.34}\text{Co}_{0.31}\text{Cu}_{0.08}\Sigma=16.64\text{As}_{6.15}\text{O}_{32} \).  (3) South Terras mine, Cornwall, England; total Fe as FeO; corresponds to \( \text{Ni}_{15.77}\text{Co}_{0.18}\text{Fe}_{0.17}\text{Cu}_{0.17}\Sigma=16.29\text{As}_{6.29}\text{O}_{32} \).  (4) \( \text{Ni}_{17}\text{As}_{6}\text{O}_{32} \).

Occurrence:  A rare secondary mineral in hydrothermal Ni–As–U ore deposits.

Association:  Bismuth, bunsenite, xanthiosite (Johanngeorgenstadt, Germany); xanthiosite (South Terras mine, Cornwall, England).


Name:  From the Greek for copper rust, an allusion to its appearance.
