

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

**Physical Properties:** Hardness = 4 D(meas.) = 5.85(7) D(calc.) = 5.772

**Optical Properties:** Semitransparent. *Color:* Dark grass-green, blue-green, pale brown. *Streak:* Pale green, pale blue-green.

*Optical Class:* [Uniaxial.]  $\omega$  = n.d.  $\epsilon$  = n.d.

**Cell Data:** *Space Group:*  $R\bar{3}m$  (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:	(1)	(2)	(3)	(4)
P <sub>2</sub> O <sub>5</sub>	0.14			
As <sub>2</sub> O <sub>5</sub>	36.57	36.3	37.6	35.19
Bi <sub>2</sub> O <sub>3</sub>	0.24			
Fe <sub>2</sub> O <sub>3</sub>	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	
Total	99.90	[100.0]	100.9	100.00

(1) Johanngeorgenstadt, Germany. (2) Do.; total Fe as FeO, recalculated after deduction of quartz 13.9%; corresponds to (Ni<sub>15.91</sub>Fe<sub>0.34</sub>Co<sub>0.31</sub>Cu<sub>0.08</sub>)<sub>Σ=16.64</sub>As<sub>6.15</sub>O<sub>32</sub>. (3) South Terras mine, Cornwall, England; total Fe as FeO; corresponds to (Ni<sub>15.77</sub>Co<sub>0.18</sub>Fe<sub>0.17</sub>Cu<sub>0.17</sub>)<sub>Σ=16.29</sub>As<sub>6.29</sub>O<sub>32</sub>.

(4) Ni<sub>17</sub>As<sub>6</sub>O<sub>32</sub>.

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

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

**Distribution:** From Johanngeorgenstadt, Saxony, Germany. In the South Terras mine, St. Stephen-in-Brannel, Cornwall, England.

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

**Type Material:** The Natural History Museum, London, England, 32590 and 1907,103.

**References:** (1) Dana, E.S. (1892) Dana's system of mineralogy, (6th edition), 870. (2) Davis, R.J., M.H. Hey, and A.W.G. Kingsbury (1965) Xanthiosite and aerugite. *Mineral. Mag.*, 35, 72–83. (3) Fleet, M.E. and J. Barbier (1989) Structure of aerugite (Ni<sub>8.5</sub>As<sub>3</sub>O<sub>16</sub>) and interrelated arsenate and germanate structural series. *Acta Cryst.*, 45, 201–205.