

Crystal Data: Monoclinic. *Point Group:* 2. As crudely formed equant grains, to 0.5 mm, with rounded crystal faces.

Physical Properties: *Cleavage:* None. *Fracture:* Uneven. *Tenacity:* Brittle. Hardness = <5
D(meas.) = n.d. D(calc.) = 4.904

Optical Properties: Translucent. *Color:* Dark violet-red to dark brownish red, dark gray in reflected light with orange to multicolored internal reflections. *Streak:* Pale reddish brown to purplish brown. *Luster:* Vitreous. Megascopically indistinguishable from brownish purple xanthiosite.

R = (470) 9.59, (546) 9.32, (589) 9.27, (650) 9.33

Cell Data: *Space Group:* C2. *a* = 33.256(5) *b* = 8.482(1) *c* = 14.191(2) *β* = 104.145(3)°
Z = 2

X-ray Powder Pattern: Johanngeorgenstadt, Saxony, Germany.

3.118 (100), 3.005 (60), 2.567 (50), 1.637 (50), 4.235 (30), 1.507(30B), 2.452 (20)

Chemistry:	(1)	(2)
NiO	19.45	18.47
CoO	18.39	17.74
CuO	3.40	3.35
CaO	0.17	
FeO	0.04	
<u>As₂O₅</u>	<u>60.32</u>	<u>60.45</u>
Total	101.77	100.00

(1) Johanngeorgenstadt, Saxony, Germany; average of 3 electron microprobe analyses, corresponding to (Ni²⁺_{14.66}Co²⁺_{13.82}Cu²⁺_{2.41}Ca_{0.17}Fe²⁺_{0.03})_{Σ=31.09}(As⁵⁺_{1.97}O₇)₁₅.

(2) (Ni_{14.1}Co_{13.5}Cu_{2.4})_{Σ=30}(As₂O₇)₁₅.

Occurrence: Known from one specimen; therein the product of oxidation of nickeline.

Association: Xanthiosite, aerugite, paganoite, nickeline, bismuth, bunsenite, rooseveltite, quartz.

Distribution: Johanngeorgenstadt, Saxony, Germany.

Name: Honors geochemist–crystallographer Professor Peter Allan Williams (b. 1950) of the University of Western Sydney, New South Wales, Australia.

Type Material: Systematic Reference Series of the National Mineral Collection, Geological Survey of Canada, Ottawa, Ontario (#68097), and the Natural History Museum, London, England; BM 2003, 6.

References: (1) Roberts, A.C., P.C. Burns, R.A. Gault, A.J. Criddle, and M.N. Feinglos (2004) Petewilliamsite, (Ni,Co)₃₀(As₂O₇)₁₅, a new mineral from Johanngeorgenstadt, Saxony, Germany: description and crystal structure. *Mineral. Mag.*, 68, 231–240. (2) (2005) *Amer. Mineral.*, 90, 273 (abs. ref. 1).