

Crystal Data: Triclinic. *Point Group:* $\bar{1}$. As crystals, to 1 mm, and as crystal aggregates. Crystals elongated along [010], showing {100} and minor {010} and {001}.

Physical Properties: Cleavage: None. *Tenacity:* Brittle. *Fracture:* Uneven. Hardness = Soft. D(meas.) = n.d. D(calc.) = 6.715 Nonfluorescent.

Optical Properties: Transparent to translucent. *Color:* Orange-brown to deep golden brown, gray in reflected light. *Streak:* Pale orange-brown. *Luster:* Adamantine.

Optical Class: $n(\text{calc.}) = 2.07, 2.09$. No birefractance, nonpleochroic.

R₁-R₂: (470) 12.85-13.1, (546) 12.35-12.6, (589) 12.15-12.5, (650) 12.0-12.35

Cell Data: *Space Group:* $P\bar{1}$. $a = 6.7127(8)$ $b = 6.8293(8)$ $c = 5.2345(6)$ $\alpha = 107.625(2)^\circ$
 $\beta = 95.409(2)^\circ$ $\gamma = 111.158(2)^\circ$ $Z = 2$

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

5.943 (100), 3.233 (100), 3.067 (60), 3.047 (50), 2.116 (50), 2.095 (40), 1.659 (40)

Chemistry:	(1)	(2)
NiO	15.37	17.67
CoO	2.05	
Bi ₂ O ₃	55.06	55.13
As ₂ O ₅	28.00	27.19
Total	100.48	100.00

(1) Johanngeorgenstadt, Saxony, Germany; electron microprobe analysis; corresponds to (Ni_{0.86}Co_{0.11})_{Σ=0.97}Bi_{0.99}As_{1.02}O₅. (2) NiBiAsO₅.

Occurrence: Formed from the breakdown of primary nickeline and native bismuth.

Association: Aerugite, xanthiosite, rooseveltite, quartz, nickeline, bismuth, bunsenite.

Distribution: At Johanngeorgenstadt, Saxony, Germany.

Name: Honors amateur mineralogists Renato (b. 1938) and Adriana (b. 1939) *Pagano* of Cinisello, Milan, Italy, for their long-standing service to the European mineralogical community.

Type Material: National Mineral Collection of Canada, Geological Survey of Canada, Ottawa, Ontario, Canada (NMCC 68083) and at The Natural History Museum, London, England.

References: (1) Roberts, A.C., P.C. Burns, R.A. Gault, A.J. Criddle, Mark N. Feinglos, and J.A.R. Stirling (2001) Paganoite, NiBi³⁺As⁵⁺O₅, a new mineral from Johanngeorgenstadt, Saxony, Germany: description and crystal structure. *Eur. J. Mineral.*, 13(1), 167-175. (2) (2000) *Amer. Mineral.*, 85, 939 (abs. ref. 1).