Nowackiite $Cu_6Zn_3As_4S_{12}$

Crystal Data: Hexagonal. *Point Group:* 3. As equant crystals, to 0.3 mm. *Twinning:* On {0001}.

Physical Properties: Hardness = n.d. VHN = n.d. D(meas.) = n.d. D(calc.) = 4.3

Optical Properties: Opaque. *Color:* Lead-gray to black. *Luster:* Metallic.
R_1–R_2: n.d.

Cell Data: *Space Group: R*3. $a = 13.440(1)$ $c = 9.17(1)$ Z = 3

X-ray Powder Pattern: Binntal, Switzerland.
1.019 (100), 1.081 (75), 1.887 (63), 3.127 (61), 1.605 (61), 1.216 (52), 1.085 (20)

Chemistry:

	(1)	(2)	(3)
Cu	31.2	30.9	30.21
Zn	15.9	16.4	15.54
As	22.4	22.8	23.75
S	31.9	32.0	30.50
Total	101.4	102.1	100.00

(1) Binntal, Switzerland; by electron microprobe, corresponding to $Cu_{6.04}Zn_{3.01}As_{3.73}S_{12.70}$.
(2) Do.; by electron microprobe, corresponding to $Cu_{6.02}Zn_{3.11}As_{3.77}S_{12.36}$. (3) $Cu_6Zn_3As_4S_{12}$.

Occurrence: In a hydrothermal deposit in dolostone, noted for a variety of Pb–As–S minerals.

Association: Sphalerite, dolomite.

Distribution: From the Lengenbach quarry, Binntal, Valais, Switzerland [TL].

Name: Honors Professor Werner Nowacki (1909–1989), Swiss mineralogist, University of Berne, Switzerland.

Type Material: University of Bern, Bern, Switzerland, holotype no longer exists, L3892-65.

References: (1) Marumo, F. and G. Burri (1965) Nowackiite, a new copper–zinc arsenosulfosalt from Lengenbach (Binnatal, Kanton Wallis). Chimia (Switzerland), 19, 500–501. (2) (1966) Amer. Mineral., 51, 532 (abs. ref. 1). (3) Marumo, F. (1967) The crystal structure of nowackiite, $Cu_6Zn_3As_4S_{12}$. Zeits. Krist., 124, 352–368. (4) Nowacki, W. (1982) Isotypic state of aktashite ($Cu_6Hg_3As_4S_{12}$) and nowackiite ($Cu_6Zn_3As_4S_{12}$). Kristallografiya (Sov. Phys. Crystal.), 27, 49–50 (in Russian).