

# Niedermayrite

# $\text{Cu}_4\text{Cd}(\text{SO}_4)_2(\text{OH})_6 \cdot 4\text{H}_2\text{O}$

©2001-2005 Mineral Data Publishing, version 1

**Crystal Data:** Monoclinic. *Point Group:*  $2/m$ . Crystals, to 50  $\mu\text{m}$ , flattened  $\parallel$   $\{010\}$ , with  $\{100\}$ ,  $\{001\}$ ,  $\{hk0\}$ , in crusts.

**Physical Properties:** *Cleavage:* Perfect on  $\{010\}$ . *Tenacity:* Brittle. Hardness = n.d.  
D(meas.) = n.d. D(calc.) = 3.29

**Optical Properties:** Semitransparent. *Color:* Bluish green. *Streak:* White.  
*Luster:* Vitreous.

*Optical Class:* Biaxial (-). *Orientation:*  $X = b$ . *Dispersion:*  $r > v$ , strong.  $\alpha = [1.599\text{--}1.619]$   
 $\beta = 1.642(2)$   $\gamma = 1.661(2)$   $2V(\text{meas.}) = 66^\circ\text{--}84^\circ$

**Cell Data:** *Space Group:*  $P2_1/m$ .  $a = 5.543(1)$   $b = 21.995(4)$   $c = 6.079(1)$   
 $\beta = 92.04(1)^\circ$   $Z = 2$

**X-ray Powder Pattern:** Laurium, Greece.

5.496 (100), 11.02 (90), 4.079 (50), 3.243 (40), 3.437 (30), 2.470 (30), 5.322 (25)

## Chemistry:

|                      | (1)     | (2)    |
|----------------------|---------|--------|
| $\text{SO}_3$        | 21.6    | 21.85  |
| MnO                  | < 0.1   |        |
| CuO                  | 45.7    | 43.42  |
| CdO                  | 16.5    | 17.52  |
| ZnO                  | < 0.1   |        |
| $\text{H}_2\text{O}$ | [16.2]  | 17.21  |
| Total                | [100.0] | 100.00 |

(1) Laurium, Greece; by electron microprobe, average of seven analyses,  $\text{H}_2\text{O}$  by difference, 18.9% by TGA; corresponds to  $\text{Cu}_{4.29}\text{Cd}_{0.96}(\text{SO}_4)_{2.01}(\text{OH})_{6.50} \cdot 3.46\text{H}_2\text{O}$ . (2)  $\text{Cu}_4\text{Cd}(\text{SO}_4)_2(\text{OH})_6 \cdot 4\text{H}_2\text{O}$ .

**Occurrence:** Very rare in the oxidation zone of a zinc-rich hydrothermal orebody in brecciated marble, formed as an alteration product of chalcopyrite and greenockite.

**Association:** Gypsum, malachite, chalcantite, brochantite, hemimorphite, hydrozincite, aurichalcite, montepsonite, otavite, sphalerite, greenockite, hawleyite, pyrite, galena.

**Distribution:** From Laurium, Greece.

**Name:** To honor Dr. Gerhard Niedermayr (1941– ), Curator, Natural History Museum, Vienna, Austria.

**Type Material:** Natural History Museum, Vienna; Institute for Mineralogy and Crystallography, Vienna University, Vienna, Austria.

**References:** (1) Giester, G., B. Rieck, and F. Brandstätter (1998) Niedermayrite,  $\text{Cu}_4\text{Cd}(\text{SO}_4)_2(\text{OH})_6 \cdot 4\text{H}_2\text{O}$ , a new mineral from the Lavrion mining district, Greece. Mineral. Petrol., 63, 19–34. (2) (1999) Amer. Mineral., 84, 686 (abs. ref. 1).