

**Crystal Data:** Hexagonal. *Point Group:*  $\bar{3} 2/m$ . Pseudocubic crystals, to 0.3 mm.

**Physical Properties:** *Fracture:* Irregular. Hardness =  $\sim 4$  D(meas.) = 1.90(3)  
D(calc.) = 1.87

**Optical Properties:** Transparent. *Color:* Colorless. *Luster:* Vitreous.  
*Optical Class:* Uniaxial (+).  $\omega = 1.4941(4)$   $\epsilon = 1.4960(4)$

**Cell Data:** *Space Group:*  $R\bar{3}c$ .  $a = 11.350(1)$   $c = 28.321(2)$   $Z = 6$

**X-ray Powder Pattern:** Hannebacher Ley volcano, Germany.  
5.73 (100), 8.11 (80), 2.69 (80), 3.63 (60), 3.28 (40), 2.11 (40), 4.87 (30)

**Chemistry:** (1) Hannebacher Ley volcano, Germany; characterized by the identity of the X-ray pattern with that of synthetic material, as well as crystal-structure analysis of the natural mineral.

**Occurrence:** A rare species, an intermediate stage in oxidation of sulfides to sulfates, preserved in a melilite nepheline leucitite quenched during a submarine volcanic eruption.

**Association:** Clinopyroxene, apatite, phillipsite, calcite.

**Distribution:** From the Hannebacher Ley volcano, one km east-northeast of Hannebach, Eifel, Germany.

**Name:** To honor P. Orschall, Cologne, Germany, who discovered the mineral.

**Type Material:** Institute of Mineralogy and Crystallography, University of Vienna, Vienna, Austria.

**References:** (1) Weidenthaler, C., E. Tillmanns, and G. Hentschel (1993) Orschallite,  $\text{Ca}_3(\text{SO}_3)_2\text{SO}_4 \cdot 12\text{H}_2\text{O}$ , a new calcium-sulfite-sulfate-hydrate mineral. *Mineral. Petrol.*, 48, 167–177. (2) (1994) *Amer. Mineral.*, 79, 572 (abs. ref. 1).