

**Crystal Data:** Orthorhombic. *Point Group:* 222. As equant to tabular grains to 0.5 mm; tabular crystals show {010}, {110}, {011}, and less commonly {111}, and {101}.

**Physical Properties:** *Cleavage:* None. *Fracture:* Conchoidal to irregular. *Tenacity:* Brittle. Hardness = 4.5 D(meas.) = 3.31 D(calc.) = 3.40

**Optical Properties:** Transparent. *Color:* Orange to orange-brown. *Streak:* Light brown. *Luster:* Vitreous to adamantine.

*Optical Class:* Biaxial (-).  $\alpha = 1.797(4)$   $\beta = 1.805-1.815$   $\gamma = 1.828(5)$   $2V(\text{meas.}) = \text{Very large}$ .  $2V(\text{calc.}) = 62^\circ-80^\circ$  *Pleochroism:* Medium strong,  $X = \text{orange-brown}$ ,  $Y = \text{pale yellowish brown}$ ,  $Z = \text{orange-brown}$ . *Dispersion:*  $r > v$ . *Absorption:*  $Z \geq X > Y$ .

**Cell Data:** *Space Group:*  $P2_12_12_1$ .  $a = 7.501(4)$   $b = 9.010(7)$   $c = 5.941(4)$   $Z = 4$

**X-ray Powder Pattern:** Glücksstern mine, Gottlob hill, Friedrichroda, Thuringia, Germany. 3.170 (100), 4.496 (72), 1.614 (41), 4.139 (32), 2.785 (30), 2.523 (30), 2.639 (27)

<b>Chemistry:</b>	(1)
CaO	24.98
SrO	0.92
MgO	17.54
MnO	1.50
CuO	1.44
V <sub>2</sub> O <sub>5</sub>	27.46
As <sub>2</sub> O <sub>5</sub>	20.32
<u>H<sub>2</sub>O</u>	<u>5.40</u>
Total	99.57

(1) Glücksstern mine, Gottlob hill, Friedrichroda, Thuringia, Germany; average electron microprobe analysis, H<sub>2</sub>O by TGA; corresponding to  $(\text{Ca}_{0.92}\text{Sr}_{0.02})_{\Sigma=0.94}(\text{Mg}_{0.90}\text{Mn}_{0.04}\text{Cu}_{0.04})_{\Sigma=0.98}[(\text{VO}_4)_{0.62}(\text{AsO}_4)_{0.36}]_{\Sigma=0.98}[\text{OH}]_{0.90}(\text{H}_2\text{O})_{0.17}]_{\Sigma=1.07}$ .

**Mineral Group:** Adelite group.

**Occurrence:** From hydrothermal baryte veins.

**Association:** Hausmannite, baryte, adelite, wakefieldite-(La).

**Distribution:** From the Glücksstern mine, Gottlob hill, Friedrichroda, Thuringia, Germany.

**Name:** For the occurrence in Germany at *Gottlob* hill.

**Type Material:** Mineralogical Collection, Bergakademie, Freiberg, Germany.

**References:** (1) Witzke, T., M. Steins, T. Doering, and U. Kolitsch (2000) Gottlobite, CaMg(VO<sub>4</sub>,AsO<sub>4</sub>)(OH), a new mineral from Friedrichroda, Thuringia, Germany. *Neues Jahrb. Mineral. Mon.*, 444-454. (2) (2000) *Amer. Mineral.* 86, 767-768 (abs. ref. 1). (3) Mandarino, J.A. (2001) New minerals. *Can. Mineral.*, 39, 1482 (abs. ref. 1).