Gottlobite $CaMg(VO_4)(OH)$

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 (-). $\alpha = 1.797(4)$ $\beta = 1.805\text{-}1.815$ $\gamma = 1.828(5)$ 2V(meas.) = Very large. 2V(calc.) = 62°-80° *Pleochroism*: Medium strong, X = orange-brown, Y = pale yellowish brown, Z = 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)

Chemistry:

	(1)
CaO	24.98
SrO	0.92
MgO	17.54
MnO	1.50
CuO	1.44
V_2O_5	27.46
As_2O_5	20.32
H_2O	5.40
Total	99.57

(1) Glücksstern mine, Gottlob hill, Friedrichroda, Thuringia, Germany; average electron microprobe analysis, H_2O by TGA; corresponding to $(Ca_{0.92}Sr_{0.02})_{\Sigma=0.94}(Mg_{0.90}Mn_{0.04}Cu_{0.04})_{\Sigma=0.98}[(VO_4)_{0.62}(AsO_4)_{0.36}]_{\Sigma=0.98}[OH)_{0.90}(H_2O)_{0.17}]_{\Sigma=1.07}$.

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, $CaMg(VO_4,AsO_4)(OH)$, 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).