

Crystal Data: Monoclinic. *Point Group:* 2/m or 2. As rhombic tabular to scaly crystals, to 0.5 mm, in parallel stacked aggregates and coatings. *Twinning:* Lamellar, with extinction angles up to 30°.

Physical Properties: *Cleavage:* Perfect on {010}. *Tenacity:* Brittle. Hardness = n.d. D(meas.) = 2.8 D(calc.) = 3.06 Radioactive.

Optical Properties: Transparent. *Color:* Emerald-green to bright grass-green. *Streak:* Pale green. *Luster:* Pearly on cleavages.

Optical Class: Biaxial (+). *Pleochroism:* X = deep blue to blue-green; Y = deep bluish green to bluish green; Z = pale yellow to yellow. *Orientation:* X = b; Z ∧ c = 33°–36°.

Dispersion: r < v, very strong. α = 1.513–1.544 β = 1.525–1.547 γ = 1.542–1.564 2V(meas.) = 60°

Cell Data: *Space Group:* P2₁/m or P2₁ (probable). a = 25.97–26.416 b = 23.702–24.50 c = 10.655–10.70 β = 103.63°–104.02° Z = 16

X-ray Powder Pattern: Jáchymov, Czech Republic.

12.6 (100), 8.70 (100), 9.65 (80), 7.10 (60), 4.32 (50), 6.13 (40), 4.65 (30)

Chemistry:

| | (1) | (2) |
|------------------|-------------|---------------|
| CO ₂ | 26.41 | 23.11 |
| UO ₃ | | 37.54 |
| UO ₂ | 37.0 | |
| CuO | 8.40 | 10.44 |
| CaO | 14.09 | 14.72 |
| H ₂ O | 13.9 | 14.19 |
| <u>Total</u> | <u>99.8</u> | <u>100.00</u> |

(1) Jáchymov, Czech Republic; conversion from UO₂ gives UO₃ 39.2% and a total of 102.0%; then corresponds to Ca_{1.83}Cu_{0.77}(UO₂)_{1.00}(CO₃)₄•6H₂O. (2) Ca₂Cu(UO₂)(CO₃)₄•6H₂O.

Occurrence: A rare oxidation product of uraninite.

Association: Liebigite, cuprosklodowskite, rösslerite, brassite, zellerite, uraninite (Jáchymov, Czech Republic).

Distribution: From the Eliáš mine, Jáchymov (Joachimsthal), Czech Republic. In the USA, at the White Canyon No. 1 mine, Frey Point, San Juan Co., Utah; and from a prospect near the Red Mesa Trading Post, Red Mesa district, Navajo Co., Arizona.

Name: Honors Josef Florian Vogl (1818–1896), Austrian mining officer and mineralogist, who studied the minerals of Jáchymov, Czech Republic and first described this species.

Type Material: n.d.

References: (1) Palache, C., H. Berman, and C. Frondel (1951) Dana's system of mineralogy, (7th edition), v. II, 237. (2) Frondel, C. (1958) Systematic mineralogy of uranium and thorium. U.S. Geol. Sur. Bull. 1064, 126–128. (3) Piret, P. and M. Deliens (1979) New crystal data for Ca, Cu, UO₂ hydrated carbonate: voglite. J. Appl. Cryst., 12, 616.