Otavite $CdCO_3$

Crystal Data: Hexagonal. *Point Group:* $\overline{3}\ 2/m$. Rhombohedra, $\{10\overline{1}1\}$, to 2 mm, typically in thin crusts. *Twinning:* Observed.

Physical Properties: *Cleavage:* On $\{10\overline{1}1\}$. Hardness = [3.5–4] (by analogy to the calcite group). D(meas.) = 4.96 (synthetic). D(calc.) = 5.03

Optical Properties: Semitransparent. *Color:* White, yellowish brown to reddish brown if impure; colorless in transmitted light. *Luster:* Vitreous to adamantine.
Optical Class: [Uniaxial (–).] $\omega = 1.830$ $\epsilon = 1.605$

Cell Data: *Space Group:* $R\overline{3}c$ (synthetic). $a = 4.93$ $c = 16.27$ Z = 6

X-ray Powder Pattern: Synthetic.
2.95 (100), 3.78 (80), 2.46 (35), 1.825 (35), 2.066 (25), 1.838 (25), 1.582 (16)

Chemistry:

	(1)	(2)
CO_2		29.55
CdO	70.2	43.12
ZnO		27.33
Total		100.00

(1) Tsumeb, Namibia; partial analysis, identification depending on Cd:Zn ratio and on correspondence of the X-ray powder pattern with that of synthetic material. (2) $(Cd, Zn)CO_3$ with Cd:Zn = 1:1.

Mineral Group: Calcite group.

Occurrence: A rare secondary mineral in the oxidized zone of hydrothermal base-metal deposits.

Association: Smithsonite, cerussite, hydrozincite, hemimorphite, azurite, malachite, rosasite, olivenite, pyromorphite, calcite, fluorite.

Distribution: From Tsumeb, Namibia. In Russia, found in the Bilyakchan fracture system, southern Verkhoyan'ya, in the Orenburg district, Southern Ural Mountains, and at Beresovsk, near Yekaterinburg (Sverdlovsk), Middle Ural Mountains. In the Montevecchio Pb–Zn mine, Sardinia, Italy. At Laurium, Greece. In the Coldstones quarry, Pateley Bridge, North Yorkshire, England. From Broken Hill, New South Wales, Australia. At the Niujiaotang zinc deposit, Duyun, Guizhou Province, China. From the Mo Ba Pb–Zn deposit, North Vietnam. In the USA, in the Blanchard mine, near Bingham, Hansonburg district, Socorro Co., New Mexico; from Franklin, Sussex Co., New Jersey.

Name: For the Otavi district, Namibia, within which lies Tsumeb, the discovery locality.

Type Material: n.d.

References: (1) Palache, C., H. Berman, and C. Frondel (1951) Dana's system of mineralogy, (7th edition), v. II, 181. (2) Borodin, V.L., V.I. Lyutin, V.V. Ilyukhin, and N.V. Belov (1979) Isomorphism between calcite–otavite. Doklady Acad. Nauk SSSR, 245, 1099–1101 (in Russian). (3) (1957) NBS Circ. 539, 7, 11.