Dietzeite $Ca_2(IO_3)_2(CrO_4)\cdot H_2O$

Crystal Data: Monoclinic. *Point Group:* $2/m$. As tabular {100} crystals, elongated along [001], to 1 mm; typically in columnar aggregates or fibrous crusts.

Physical Properties: *Cleavage:* On {100}, interrupted. *Fracture:* Conchoidal. Hardness = 3.5 D(meas.) = 3.62–3.70 D(calc.) = 3.822 Soluble in H_2O.

Optical Properties: Transparent. *Color:* Deep golden yellow. *Optical Class:* Biaxial (–). *Orientation:* $Y = b$; $Z \wedge c = 6°$. *Dispersion:* $r < v$, very strong, markedly inclined. $\alpha = 1.825$ $\beta = 1.842$ $\gamma = 1.857$ 2V(meas.) = 86°

Cell Data: *Space Group:* $P2_1/c$. $a = 10.118(1)$ $b = 7.238(1)$ $c = 13.965(2)$ $\beta = 106.62(1)°$ Z = 4

X-ray Powder Pattern: Oficina Lautaro, Chile. (ICDD 25-132).
3.48 (100), 3.13 (100), 3.61 (90), 2.98 (60), 2.88 (60), 1.870 (60), 1.741 (50)

Chemistry:

	(1)	(2)
I_2O_5	58.10	59.19
CrO_3	19.90	17.73
CaO	21.50	19.89
H_2O		3.19
Total	99.50	100.00

(1) Atacama Desert, Chile. (2) $Ca_2(IO_3)_2(CrO_4)\cdot H_2O$; crystal-structure analysis confirms one H_2O molecule as an essential chemical component.

Occurrence: In nitrate deposits in an arid region.

Association: Lopezite, tarapacáite, ulexite (Oficina Maria Elena, Chile).

Distribution: In Chile, from the Atacama Desert, as in the Taltal district, from near the Oficina Louisa and Oficina Chacabuco; at Pampa Pique III, about one km north of Oficina Lautaro, and near Oficina Maria Elena, near Tocopilla, Antofagasta; from near Zapiga, Tarapacá.

Name: Honors August Dietze (?–1893?), German chemist who first described this mineral.

References: (1) Palache, C., H. Berman, and C. Frondel (1951) Dana's system of mineralogy, (7th edition), v. II, 318–319. (2) Burns, P.C. and F.C. Hawthorne (1993) The crystal structure of dietzeite, $Ca_2H_2O(IO_3)_2(CrO_4)$, a heteropolyhedral framework mineral. Can. Mineral., 31, 313–319.