Chongite $Ca_3Mg_2(AsO_4)_2(AsO_3OH)_2 \cdot 4H_2O$

Crystal Data: Monoclinic. *Point Group*: 2/*m*. As prismatic crystals, to 1 mm, elongated along [001] and exhibiting {100}, {110}, {111}, {$11\bar{1}$}, {$20\bar{1}$} and {311}. Typically in radial aggregates to 2 mm.

Physical Properties: *Cleavage*: Good on {100}. *Tenacity*: Brittle. *Fracture*: Conchoidal. Hardness = ~ 3.5 D(meas.) = 3.09(2) D(calc.) = 3.087 Soluble in dilute HCl.

Optical Properties: Transparent. *Color*: Colorless. *Streak*: White. *Luster*: Vitreous. *Optical Class*: Biaxial (-). α = 1.612(1) β = 1.626(1) γ = 1.635(1) 2V(meas.) = 76.9(1)° 2V(calc.) = 76.9° *Orientation:* $X = b$, $Z \wedge a = 27°$ in β obtuse. *Dispersion*: Distinct, $r < v$.

Cell Data: Space Group: *C*2/*c*. a = 18.5879(6) b = 9.3660(3) c = 9.9622(7) β = 96.916(7)° Z = 4

X-ray Powder Pattern: Torrecillas mine, northern Atacama Desert, Iquique Province, Chile. 3.275 (100), 4.644 (62), 3.372 (62), 3.113 (57), 2.384 (30), 8.35 (29), 4.396 (26)

Chemistry:	(1)	(2)
CaO	19.96	21.07
MgO	9.55	10.09
MnO	1.18	
As_2O_5	56.42	57.56
H_2O	[11.13]	11.28
Total	98.24	100.00

(1) Torrecillas mine, northern Atacama Desert, Iquique Province, Chile; average of 12 electron microprobe analyses, H_2O from stoichiometry; corresponds to $(Ca_{2.90}Mg_{1.93}Mn_{0.14})_{\Sigma=4.97}As_4O_{20}H_{10.07}$. (2) $Ca_3Mg_2(AsO_4)_2(AsO_3OH)_2 \cdot 4H_2O$.

Occurrence: A secondary mineral from the oxidation of native arsenic and other As-bearing primary phases, followed by later alteration by saline fluids derived from evaporating meteoric water under hyperarid conditions.

Mineral Group: Hureaulite group.

Association: Native arsenic, arsenolite, gajardoite, talmessite, torrecillasite.

Distribution: From the Torrecillas mine, northern Atacama Desert, Iquique Province, Chile.

Name: Honors Dr. Guillermo Chong Díaz (b. 1936), a prominent Chilean geologist and academician.

Type Material: Natural History Museum of Los Angeles County, Los Angeles, California, USA (65585-65587).

References: (1) Kampf, A.R., B.P. Nash, M. Dini, and A.A. Molina Donoso (2016) Chongite, $Ca_3Mg_2(AsO_4)_2(AsO_3OH)_2 \cdot 4H_2O$, a new arsenate member of the hureaulite group from the Torrecillas mine, Iquique Province, Chile. Mineral. Mag., 80(7), 1255-1263. (2) (2017) Amer. Mineral., 102, 918 (abs. ref. 1).