

Macdonaldite**BaCa₄Si₁₆O₃₆(OH)₂•10H₂O**

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Crystal Data: Orthorhombic. *Point Group:* $2/m\ 2/m\ 2/m$ or $mm2$. Needlelike crystals show {010}, {001}, and {100}, and are elongated along [100], to 6 mm; also fibrous, in radiating aggregates, and granular.

Physical Properties: *Cleavage:* Perfect on {010}, good on {001}, poor or a fracture on {100}. Hardness = 3.5–4 D(meas.) = 2.27(2) D(calc.) = 2.27

Optical Properties: Transparent to translucent. *Color:* White to colorless. *Streak:* White. *Luster:* Satiny to vitreous.

Optical Class: Biaxial (+) or (–). *Orientation:* $X = c$; $Y = b$; $Z = a$. $\alpha = 1.518(2)$
 $\beta = 1.524(2)$ $\gamma = 1.530(2)$ $2V(\text{meas.}) = 90(5)^\circ$ $2V(\text{calc.}) = 90^\circ$

Cell Data: *Space Group:* $Bmmb$, $B2mb$, or $Bm2_1b$. $a = 14.06(1)$ $b = 23.52(2)$
 $c = 13.08(1)$ $Z = 4$

X-ray Powder Pattern: Fresno Co., California, USA.

6.5 (100), 4.36 (80), 6.3 (50), 3.36 (50), 3.02 (45), 2.74 (45), 8.9 (40)

Chemistry:

	(1)
SiO ₂	61.1
TiO ₂	0.01
Al ₂ O ₃	0.06
FeO	< 0.01
MnO	0.004
MgO	< 6.05
CaO	14.8
SrO	< 0.05
BaO	10.2
LOI	13.7
Total	[100.00]

(1) Fresno Co., California, USA; by D-C arc spectrography, loss on ignition taken as H₂O, stated to be recalculated to 100.00%; corresponds to (Ba_{0.98}Sr_{0.01})_{Σ=0.99}(Ca_{3.90}Mg_{0.02})_{Σ=3.92}(Si_{15.03}Al_{0.02})_{Σ=15.05}O_{35.01}•11.24H₂O.

Occurrence: As veinlets, fracture coatings, and disseminated in a sanbornite-quartz-bearing metamorphic rock.

Association: Sanbornite, quartz.

Distribution: In the Big Creek-Rush Creek area, Fresno Co., and on Trumbull Peak, near Incline, Mariposa Co., California, USA.

Name: For Gordon Andrew MacDonald (1911–1978), American volcanologist, University of Hawaii, Honolulu, Hawaii, USA.

Type Material: California Division of Mines & Geology, San Francisco, California, USA.

References: (1) Alfors, J.T., M.C. Stinson, R.A. Matthews, and A. Pabst (1965) Seven new barium minerals from eastern Fresno County, California. *Amer. Mineral.*, 50, 314–340.
(2) Cannillo, E., G. Rossi, and L. Ungaretti (1968) The crystal structure of macdonaldite. *Atti Rend. Accad. Lincei*, 45, 399–414.