Shimazakiite $Ca_2B_2O_5$

Crystal Data: Monoclinic or orthorhombic. *Point Group*: 2/*m* or 222. As aggregates of μm-scale lamellae parallel to (001), to 3 mm.

Physical Properties: *Cleavage*: None. *Fracture*: Uneven. *Tenacity*: Brittle.
Hardness = 4.5 VHN = 549 (50 g load) [4*M* polytpye] VHN = 598 (50 g load) [4*O* polytype]
D(meas.) = 2.81(2) [4*O* polytype] D(calc.) = 2.78 [4*M* polytype] D(calc.) = 2.77 [4*O* polytype]

Optical Properties: Transparent. *Color*: Grayish white. *Streak*: White. *Luster*: Vitreous.
Optical Class: Biaxial (-) α = 1.586(2) β = 1.650(2) γ = 1.667(2) 2V(calc.) = 53º [4*M* polytype]; α = 1.584(2) β = 1.648(2) γ = 1.670(2) 2V(calc.) = 54.88º [4*O* polytype]

Cell Data: *Space Group*: $P2_1/c$. a = 3.5485(12) b = 6.352(2) c = 19.254(6) β = 92.393(13)º Z = 4 [4*M* polytype]; $P2_12_12_1$. a = 3.55645(8) b = 6.35194(15) c = 19.2534(5) Z= 4 [4*O* polytype]

X-ray Powder Pattern: Fuka mine, Okayama Prefecture, Japan.
2.92 (100), 3.02 (84), 2.81 (56), 2.76 (32), 1.880 (32), 3.84 (30), 6.03 (27) [shimazakiite-4*M*]
2.86 (100), 1.903 (44), 3.02 (42), 3.84 (33), 2.79 (29), 6.03 (19), 3.11 (19) [shimazakiite-4*O*]

Chemistry:	(1)	(2)
CaO	61.09	61.30
B_2O_3	36.39	36.51
H_2O	[1.19]	[1.20]
Total	98.67	99.01

(1) Fuka mine, Okayama Prefecture, Japan; average of 28 electron microprobe analyses supplemented by IR spectroscopy, H_2O from stoichiometry and structure analysis; 4*M* polytype corresponding to $Ca_2B_{1.92}O_{4.76}(OH)_{0.24}$. (2) Fuka mine, Okayama Prefecture, Japan; average of 25 electron microprobe analyses supplemented by IR spectroscopy, H_2O from stoichiometry and structure analysis; 4*O* polytype corresponding to $Ca_2B_{1.92}O_{4.76}(OH)_{0.24}$.

Polymorphism & Series: 4*M* and 4*O* polytypes.

Occurrence: In an irregular vein in crystalline limestone near gehlenite-spurrite-bearing contact metamorphic rocks (skarn).

Association: Takedaite, sibirskite, olshanskyite, parasibirskite, nifontovite, calcite, an uncharacterized hydrous calcium borate.

Distribution: At the Fuka mine, Okayama Prefecture, Japan.

Name: Honors Emeritus Professor Hidehiko Shimazaki (b. 1939), University of Tokyo, Japan, in recognition of his outstanding contributions to skarn mineralogy.

Type Material: National Museum of Nature and Science, Tokyo, Japan (NSM-M41025 and NSM-M43418).

References: (1) Kusachi, I., S. Kobayashi, Y. Takeuchi, Y. Nakamuta, T. Nagase, K. Yokoyama, K. Momma, R. Miyawaki, M. Shigeoka, and S. Matsubara (2013) Shimazakiite-4*M* and shimazakiite-4*O*, $Ca_2B_2O_5$, two polytypes of a new mineral from Fuka, Okayama Prefecture, Japan. Mineral. Mag., 77(1), 93-105. (2) (2016) Amer. Mineral., 101, 490-491 (abs. ref. 1).