

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

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

**Optical Properties:** Transparent. *Color:* Grayish white. *Streak:* White. *Luster:* Vitreous.  
*Optical Class:* Biaxial (-)  $\alpha = 1.586(2)$   $\beta = 1.650(2)$   $\gamma = 1.667(2)$   $2V(\text{calc.}) = 53^\circ$  [4M polytype];  $\alpha = 1.584(2)$   $\beta = 1.648(2)$   $\gamma = 1.670(2)$   $2V(\text{calc.}) = 54.88^\circ$  [4O polytype]

**Cell Data:** *Space Group:*  $P2_1/c$ .  $a = 3.5485(12)$   $b = 6.352(2)$   $c = 19.254(6)$   $\beta = 92.393(13)^\circ$   
 $Z = 4$  [4M polytype];  $P2_12_12_1$ .  $a = 3.55645(8)$   $b = 6.35194(15)$   $c = 19.2534(5)$   $Z = 4$  [4O 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-4M]  
2.86 (100), 1.903 (44), 3.02 (42), 3.84 (33), 2.79 (29), 6.03 (19), 3.11 (19) [shimazakiite-4O]

| Chemistry:                    | (1)    | (2)    |
|-------------------------------|--------|--------|
| CaO                           | 61.09  | 61.30  |
| B <sub>2</sub> O <sub>3</sub> | 36.39  | 36.51  |
| H <sub>2</sub> O              | [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<sub>2</sub>O from stoichiometry and structure analysis; 4M polytype corresponding to Ca<sub>2</sub>B<sub>1.92</sub>O<sub>4.76</sub>(OH)<sub>0.24</sub>. (2) Fuka mine, Okayama Prefecture, Japan; average of 25 electron microprobe analyses supplemented by IR spectroscopy, H<sub>2</sub>O from stoichiometry and structure analysis; 4O polytype corresponding to Ca<sub>2</sub>B<sub>1.92</sub>O<sub>4.76</sub>(OH)<sub>0.24</sub>.

**Polymorphism & Series:** 4M and 4O 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-4M and shimazakiite-4O, Ca<sub>2</sub>B<sub>2</sub>O<sub>5</sub>, 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).