Qilianshanite $H_3Na(HCO_3)(BO_3)\cdot 2H_2O$

Crystal Data: Monoclinic. *Point Group:* 2. Crystals are tabular to prismatic, to 2 mm, commonly in massive aggregates. *Twinning:* Polysynthetic.

Physical Properties: *Cleavage:* {100} and {010}, perfect. Hardness = ∼2
D(meas.) = 1.706 D(calc.) = 1.639 Soluble in H_2O.

Optical Properties: Transparent. *Color:* Colorless. *Streak:* White. *Luster:* Vitreous. *Optical Class:* Biaxial (–). *Orientation:* $X = b$; $Y \wedge a = 1°$; $Z \wedge c = 9°$. *Dispersion:* $r < v$, medium. $\alpha = [1.351]$ $\beta = 1.459(2)$ $\gamma = 1.486(2)$ 2V(meas.) = 50°

Cell Data: *Space Group:* $C2$. $a = 16.119(8)$ $b = 6.928(4)$ $c = 6.730(3)$ $\beta = 100.46(4)°$
Z = 4

X-ray Powder Pattern: Juhongtu deposit, China.
3.464 (100), 3.173 (59), 6.36 (25), 1.731 (19), 4.203 (6), 2.608 (5), 2.642 (3)

Chemistry:

	(1)	(2)
CO_2	16.99	24.20
B_2O_3	20.02	19.14
MgO	0.05	
CaO	0.22	
Na_2O	17.92	17.04
H_2O	43.11	39.62
Total	98.31	100.00

(1) Juhongtu deposit, China; corresponds to $H_{8.86}Na_{1.08}Ca_{0.01}C_{0.71}B_{1.06}O_{8.00}$.
(2) $H_3Na(HCO_3)(BO_3)\cdot 2H_2O$, confirmed by crystal-structure analysis.

Occurrence: Formed by reaction of borate-rich waters with earlier sodium carbonates in a borate deposit.

Association: Tincalconite, nahcolite, calcite, quartz.

Distribution: From the Juhongtu borate deposit, Qilian Mountains, Qinghai Province, China.

Name: For its occurrence in the Qilian Mountains, China.

Type Material: National Museum of Geology, Beijing, China.

References: (1) Luo Shiqing, Lu Jian'an, Wang Liben, and Zhu Jingqing (1993) Qilianshanite – a new boric carbonate mineral. Acta Mineral. Sinica, 13(2), 97–101 (in Chinese with English abs.). (2) (1994) Amer. Mineral., 79, 765 (abs. ref. 1). (3) Wang Liben, Shi Jianqiu, and Zhou Kangling (1994) Crystal structure of qilianshanite. Geol. Rev., 40(4), 347–353 (in Chinese with English abs.).