

**Melcherite****Ba<sub>2</sub>Na<sub>2</sub>Mg[Nb<sub>6</sub>O<sub>19</sub>]·6H<sub>2</sub>O**

**Crystal Data:** Hexagonal. *Point Group:*  $\bar{3}$ . As irregular tabular crystals to 200  $\mu\text{m}$ .

**Physical Properties:** *Cleavage:* Perfect on {0001}. *Fracture:* n.d. *Tenacity:* n.d. Hardness = n.d. D(meas.) = n.d. D(calc.) = 3.733

**Optical Properties:** Transparent. *Color:* Beige. *Streak:* White. *Luster:* Vitreous. *Optical Class:* Uniaxial (?).  $n(\text{calc.}) = 1.924$ .

**Cell Data:** Space Group:  $R\bar{3}$ .  $a = 9.0117(6)$   $c = 23.3986(16)$   $Z = 3$

**X-ray Powder Pattern:** Jacupiranga mine, Cajati county, São Paulo state, Brazil. 7.81 (100), 3.250 (33), 2.165 (30), 3.904 (22), 3.852 (21), 7.41 (14), 2.952 (13)

<b>Chemistry:</b>	(1)	(2)
K <sub>2</sub> O	0.70	3.88
Na <sub>2</sub> O	4.30	2.60
BaO	20.66	12.44
CaO	0.83	4.41
MgO	3.00	3.15
MnO	0.09	0.28
Al <sub>2</sub> O <sub>3</sub>	0.08	0.02
Nb <sub>2</sub> O <sub>5</sub>	61.74	65.79
SiO <sub>2</sub>	0.02	0
H <sub>2</sub> O	8.35	8.90
Total	99.77	101.47

(1) Jacupiranga mine, Cajati county, São Paulo state, Brazil; average of 4 electron microprobe analyses, H<sub>2</sub>O calculated from structure; corresponds to (Ba<sub>1.75</sub>K<sub>0.19</sub>) $\Sigma=1.94$ (Na<sub>1.80</sub>Ca<sub>0.19</sub>) $\Sigma=1.99$ (Mg<sub>0.96</sub>Mn<sub>0.02</sub>Al<sub>0.02</sub>) $\Sigma=1.00$ Nb<sub>6.02</sub>O<sub>19.00</sub>·6H<sub>2</sub>O. (2) Do.; average of 8 electron microprobe analyses, H<sub>2</sub>O calculated from structure; corresponds to (Ba<sub>0.99</sub>K<sub>1.00</sub>) $\Sigma=1.99$ (Na<sub>1.02</sub>Ca<sub>0.96</sub>) $\Sigma=1.98$ (Mg<sub>0.95</sub>Mn<sub>0.05</sub>) $\Sigma=1.00$ Nb<sub>6.02</sub>O<sub>19.00</sub>·6H<sub>2</sub>O.

**Occurrence:** In a vug in dolomitic carbonatite.

**Association:** Dolomite, calcite, 'pyrochlore', magnetite, pyrrhotite, tochilinite, pyrite, fluorapatite.

**Distribution:** From the Jacupiranga mine, Cajati county, São Paulo state, Brazil.

**Name:** Honors Geraldo Conrado Melcher (1924-2011), a pioneer in Jacupiranga carbonatite studies.

**Type Material:** Geosciences Museum, Institute of Geosciences, University of São Paulo, Brazil (DR982) and the University of Arizona Mineral Museum, Tucson, Arizona, USA, RRUFF Project (R130752).

**References:** (1) Andrade, M.B., D. Atencio, L.A.D. Menezes Filho, and J. Spratt (2018) Melcherite, trigonal Ba<sub>2</sub>Na<sub>2</sub>Mg[Nb<sub>6</sub>O<sub>19</sub>]·6H<sub>2</sub>O, the second natural hexaniobate, from Cajati, São Paulo, Brazil: Description and crystal structure. *Mineral. Mag.*, 82(1), 111-120. (2) (2019) *Amer. Mineral.*, 104(9), 1364 (abs. ref 1).