

**Crystal Data:** Tetragonal. *Point Group:*  $\bar{4}2m$ . As thin square tablets, to 3 mm, with prominent {001}, also {011}, {111}, and {110}.

**Physical Properties:** *Cleavage:* Perfect on {010}, distinct on {001}, poor on {110}. *Fracture:* Irregular. Hardness = ~5 D(meas.) = 3.034 D(calc.) = 3.03 Strongly piezoelectric.

**Optical Properties:** Transparent. *Color:* Colorless. *Luster:* Vitreous. *Optical Class:* Uniaxial (+).  $\omega = 1.664(1)$   $\epsilon = 1.672(1)$

**Cell Data:** *Space Group:*  $P\bar{4}2m$ .  $a = 7.48(2)$   $c = 5.044(3)$   $Z = [2]$

**X-ray Powder Pattern:** Gugua, China.

2.765 (10), 1.709 (7), 1.485 (7), 5.25 (4), 2.97 (4), 2.359 (4), 2.315 (4)

<b>Chemistry:</b>	(1)	(2)	(3)		(1)	(2)	(3)
SiO <sub>2</sub>	45.26	44.90	46.70	Na <sub>2</sub> O		0.72	
TiO <sub>2</sub>	0.02	trace		K <sub>2</sub> O		0.20	
(Zr, Hf)O <sub>2</sub>	0.45			F		0.25	
Al <sub>2</sub> O <sub>3</sub>	1.08	2.17		Cl	0.73	0.18	
Fe <sub>2</sub> O <sub>3</sub>	0.03	0.11		H <sub>2</sub> O <sup>+</sup>	0.40	0.90	
MnO	0.11	0.07		H <sub>2</sub> O <sup>-</sup>	0.02	0.36	
BeO	8.89	9.49	9.72	P <sub>2</sub> O <sub>5</sub>		0.08	
MgO	0.39	0.38		-O = (F, Cl) <sub>2</sub>	0.17	0.15	
CaO	42.94	40.09	43.58	Total	100.15	[99.75]	100.00

(1) Gugua, China. (2) Do.; original total given as 99.79%. (3) Ca<sub>2</sub>BeSi<sub>2</sub>O<sub>7</sub>.

**Polymorphism & Series:** Dimorphous with jeffreyite.

**Mineral Group:** Melilite group.

**Occurrence:** In cavities in skarns and melanite adjacent to an alkalic syenite.

**Association:** Orthoclase, vesuvianite, aegirine, titanite, apatite, prehnite.

**Distribution:** Near the village of Gugua, otherwise unlocated in China.

**Name:** For the locality near Gugua, China.

**Type Material:** n.d.

**References:** (1) Chi-Jui Peng, Rung-Lung Tsao, and Zu-Rung Zou (1962) Guguaite, Ca<sub>2</sub>BeSi<sub>2</sub>O<sub>7</sub>, a new beryllium mineral and its relation to the melilite group. *Scientia Sinica*, 11, 977–988 (in English). (2) (1963) *Amer. Mineral.*, 48, 211–212 (abs. ref. 1). (3) Kimata, M. and H. Ohashi (1982) The crystal structure of synthetic guguaite, Ca<sub>2</sub>BeSi<sub>2</sub>O<sub>7</sub>. *Neues Jahrb. Mineral., Abh.*, 143, 210–222.