

**Hsianghualite****Li<sub>2</sub>Ca<sub>3</sub>Be<sub>3</sub>(SiO<sub>4</sub>)<sub>3</sub>F<sub>2</sub>**

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**Crystal Data:** Cubic. *Point Group:* 432. Crystals modified by the dodecahedron, to 1.5 cm; granular, massive.

**Physical Properties:** *Tenacity:* Brittle. Hardness = 6.5 VHN = 896 D(meas.) = 2.97–3.00 D(calc.) = 2.944

**Optical Properties:** Transparent to translucent. *Color:* Milk-white to colorless.

*Luster:* Vitreous.

*Optical Class:* Isotropic.  $n = 1.613$

**Cell Data:** *Space Group:* I4<sub>1</sub>32.  $a = 12.897(4)$   $Z = 8$

**X-ray Powder Pattern:** Hunan Province, China.

2.746 (100), 2.209 (100), 2.090 (90), 1.753 (70), 3.443 (60), 1.691 (52), 1.228 (45)

**Chemistry:**

|                                | (1)   | (2)   |
|--------------------------------|-------|-------|
| SiO <sub>2</sub>               | 35.66 | 36.64 |
| Al <sub>2</sub> O <sub>3</sub> | 0.50  |       |
| Fe <sub>2</sub> O <sub>3</sub> | 0.22  | 0.06  |
| BeO                            | 15.78 | 16.30 |
| MgO                            | 0.18  | 0.17  |
| CaO                            | 34.60 | 35.18 |
| Li <sub>2</sub> O              | 5.85  | 5.60  |
| Na <sub>2</sub> O              | 0.13  | 0.03  |
| K <sub>2</sub> O               | 0.06  | 0.03  |
| F                              | 7.81  | 7.27  |
| LOI                            | 1.28  |       |
| –O = F <sub>2</sub>            | 3.2   | 3.06  |
| Total                          | 98.87 | 98.22 |

(1) Hunan Province, China; corresponds to Li<sub>1.95</sub>Ca<sub>3.07</sub>Be<sub>3.13</sub>(SiO<sub>4</sub>)<sub>3</sub>F<sub>2.00</sub>. (2) Do.; corresponds to Li<sub>1.85</sub>Ca<sub>3.08</sub>Be<sub>3.20</sub>(SiO<sub>4</sub>)<sub>3</sub>F<sub>2.06</sub>.

**Occurrence:** In phlogopite veins in a fluorine-rich metamorphosed Devonian limestone intruded by a beryllium-bearing granite.

**Association:** Fluorite, zinnwaldite, chrysoberyl, taaffeite, liberite.

**Distribution:** On Hsianghua Ridge, Linwu Co., Hunan Province, China.

**Name:** For the place of discovery; the word means *fragrant flower* in Chinese.

**Type Material:** n.d.

**References:** (1) Wen-Hui Huang, Shao-Hua Tu, K'ung-Hai Wang, Chun-Lin Chao, and Cheng-Chih Yu (1958) Hsiang-hua-shih [hsianghualite], a new beryllium mineral. *Ti-chih-yueh-k'an*, 7, 35 (in Chinese). (2) (1959) *Amer. Mineral.*, 44, 1327–1328 (abs. ref. 1). (3) Beus, A.A. (1960) *Geochemistry of beryllium and genetic types of beryllium deposits.*, 69–71. (4) (1961) *Amer. Mineral.*, 46, 244 (abs. ref. 3). (5) Vlasov, K.A., Ed. (1966) *Mineralogy of rare elements*, v. II, 127–129.