

## Kamarizaite

## $\text{Fe}^{3+}_3(\text{AsO}_4)_2(\text{OH})_3 \cdot 3\text{H}_2\text{O}$

**Crystal Data:** Triclinic. *Point Group:*  $\bar{1}$ . As aggregates to 3 cm composed of platy crystals to 1  $\mu\text{m}$  and in submicron kidney-shaped segregations.

**Physical Properties:** *Cleavage:* None. *Fracture:* n.d. *Tenacity:* Brittle. *Hardness* = ~3  
 $D(\text{meas.}) = 3.16(1)$   $D(\text{calc.}) = 3.471$

**Optical Properties:** Earthy. *Color:* Light yellow to beige. *Streak:* Light yellow.

*Luster:* Porcelain-like.

*Optical Class:* Biaxial (+). Nonpleochroic.  $n(\text{min.}) = 1.825$   $n(\text{max.}) = 1.835$   
 $n(\text{average}) = 1.83(1)$  (for a fine-grained aggregate)

**Cell Data:** *Space Group:*  $P\bar{1}$ .  $a = 7.7048(6)$   $b = 8.0892(6)$   $c = 10.2160(8)$   $\alpha = 68.304(6)^\circ$   
 $\beta = 75.326(7)^\circ$   $\gamma = 63.534(6)^\circ$   $Z = 2$

**X-ray Powder Pattern:** Kamariza mine, Lavrion mining district, Attica Region, Greece.  
3.947 (100), 3.332 (60), 3.085 (58), 5.85 (52), 6.61 (37), 3.396 (37), 3.245 (34)

### Chemistry:

	(1)
CaO	0.35
Fe <sub>2</sub> O <sub>3</sub>	41.78
As <sub>2</sub> O <sub>5</sub>	39.89
SO <sub>3</sub>	1.49
H <sub>2</sub> O	15.3
Total	98.81

(1) Kamariza mine, Lavrion mining district, Attica Region, Greece; average electron microprobe analysis supplemented by Mössbauer and IR spectroscopy, H<sub>2</sub>O by TGA; corresponds to Ca<sub>0.03</sub>Fe<sup>3+</sup><sub>2.86</sub>(AsO<sub>4</sub>)<sub>1.90</sub>(SO<sub>4</sub>)<sub>0.10</sub>(OH)<sub>2.74</sub>·3.27H<sub>2</sub>O. (2) Le Mazet vein, Échassières, Auvergne, France; SEM-EDS analysis, analysis not given; corresponds to (Fe<sup>3+</sup><sub>2.80</sub>Al<sub>0.20</sub>)<sub>Σ=3.00</sub>[(As<sub>1.93</sub>P<sub>0.07</sub>)O<sub>4</sub>]<sub>2</sub>(OH)<sub>3</sub>·3H<sub>2</sub>O.

**Occurrence:** From supergene alteration of primary Pb-Zn ore.

**Association:** Goethite, scorodite, jarosite.

**Distribution:** The dump of the Kamariza mine, Lavrion mining district, Attica Region, Greece [TL]. From the Le Mazet vein, Échassières, Auvergne, France.

**Name:** For the mine where the first studied samples were collected.

**Type Material:** Mineralogical Collection, Technische Universität Bergakademie, Freiberg, Germany (82199).

**References:** (1) Chukanov, N.V., I.V. Pekov, S. Möckel, A.A. Mukhanova, D.I. Belakovskiy, L.A. Levitskaya, and G.K. Bekenova (2010) Kamarizaite  $\text{Fe}^{3+}_3(\text{AsO}_4)_2(\text{OH})_3 \cdot 3\text{H}_2\text{O}$  - a new mineral, arsenate analogue of tinticite. Geology of Ore Deposits 52, 599-605. (2) Kolitsch, U., C.L. Lengauer, and G. Giester (2016) Crystal structure and isotypism of the iron(III) arsenate kamarizaite and the iron(III) phosphate tinticite. Eur. J. Mineral., 28, 71-81. (3) Majzlan, J., U.G. Nielsen, E. Dachs, A. Benisek, P. Drahota, U. Kolitsch, J. Herrmann, R. Bolanz, and M. Števko (2018) Thermodynamic properties of mansfieldite ( $\text{AlAsO}_4 \cdot 2\text{H}_2\text{O}$ ), angelellite ( $\text{Fe}_4(\text{AsO}_4)_2\text{O}_3$ ) and kamarizaite ( $\text{Fe}_3(\text{AsO}_4)_2(\text{OH})_3 \cdot 3\text{H}_2\text{O}$ ). Mineral. Mag., 82, 1333-1354.