

Ferriakasakaite-(Ce)**CaCeFe³⁺AlMn²⁺(Si₂O₇)(SiO₄)O(OH)**

Crystal Data: Monoclinic. *Point Group:* 2/m. As homogeneous domains within strongly inhomogeneous prismatic crystals elongated on [010], to 1 mm.

Physical Properties: *Cleavage:* None. *Tenacity:* Brittle. *Fracture:* Irregular to conchoidal. Hardness = 5.5-6 (by analogy in the allanite group) D(meas.) = n.d. D(calc.) = 4.02 Non-fluorescent. Indistinguishable from manganiakasakaite-(La) based on physical properties alone.

Optical Properties: Transparent. *Color:* Dark brown. *Streak:* Brown. *Luster:* Vitreous. *Optical Class:* Biaxial. $n(\text{calc.}) = 1.830$

Cell Data: *Space Group:* P2₁/m. $a = 8.9033(3)$ $b = 5.7066(2)$ $c = 10.1363(3)$ $\beta = 114.222(2)^\circ$ $Z = 2$

X-Ray Diffraction Pattern: Monte Maniglia, Bellino, Varaita Valley, Cuneo Province, Italy. 2.911 (vs), 2.711 (ms), 2.616 (ms), 3.519 (m), 4.65 (mw), 2.841 (mw), 2.404 (mw)

Chemistry:	(1)	(2)
SiO ₂	31.90	29.49
Al ₂ O ₃	12.54	8.34
Fe ₂ O ₃	8.81	13.06
La ₂ O ₃	4.89	
Ce ₂ O ₃	10.69	26.85
Pr ₂ O ₃	0.85	
Nd ₂ O ₃	1.82	
Gd ₂ O ₃	0.15	
MgO	0.09	
CaO	9.82	9.18
MnO _{total}	16.65	
MnO	[12.56]	11.61
Mn ₂ O ₃	[4.56]	
H ₂ O	[1.59]	1.49
Total	100.27	100.00

(1) Monte Maniglia, Bellino, Varaita Valley, Cuneo Province, Piedmont, Italy; average electron microprobe analysis, calculated values for MnO, Mn₂O₃ and H₂O; corresponds to $A^{(1)}(\text{Ca}_{0.64}\text{Mn}_{2+0.36})^{A^{(2)}}(\text{Ce}_{0.37}\text{La}_{0.17}\text{Nd}_{0.06}\text{Pr}_{0.03}\text{Ca}_{0.25}\square_{0.02})^{M^{(1)}}(\text{Fe}^{3+}_{0.61}\text{Al}_{0.39})^{M^{(2)}}\text{Al}_{1.00}^{M^{(3)}}(\text{Mn}^{2+}_{0.64}\text{Mn}^{3+}_{0.33}\text{Fe}^{3+}_{0.02}\text{Mg}_{0.01})^{T^{(1-3)}}\text{Si}_{3.01}\text{O}_{12}(\text{OH})$. (2) CaCeFe³⁺AlMn²⁺[Si₂O₇][SiO₄]O(OH).

Mineral Group: Epidote supergroup, allanite group.

Occurrence: In a manganese deposit in metasedimentary rocks.

Association: Calcite, hematite, manganiandrosite-(Ce), “androsite-(Ce)”, epidote.

Distribution: Monte Maniglia, Bellino, Varaita Valley, Cuneo Province, Piedmont, Italy.

Name: A prefix identifies the dominant cation at the M(1) site (other than Al), and a suffix for the dominant REE at the A(2) site in a member of the group with A(1) = Ca and M(3) = Mn²⁺ which is “akasakaite” (honoring Masahide Akasaka, professor of mineralogy at the Shimane University)

Type Material: Natural History Museum, University of Pisa, Italy (19903).

References: (1) Biagioni, C., P. Bonazzi, M. Pasero, F. Zaccarini, C. Balestra, R. Bracco, and M.E. Ciriotti (2019) Manganiakasakaite-(La) and ferriakasakaite-(Ce), two new epidote supergroup minerals from Piedmont, Italy. *Minerals*, 9, 353, 1-15.