

Manganiakasakaite-(La)**CaLa(Mn³⁺AlMn²⁺)[Si₂O₇][SiO₄]O(OH)**

Crystal Data: Monoclinic. *Point Group:* 2/m. As subhedral grains to 0.5 mm embedded in pyroxmangite.

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.) = 4.09 Non-fluorescent. Indistinguishable from ferriakasakaite-(Ce) based on physical properties alone.

Optical Properties: Transparent. *Color:* Dark brown. *Streak:* Brown. *Luster:* Vitreous. *Optical Class:* Biaxial. *n*(calc.) = 1.860

Cell Data: *Space Group:* P2₁/m. *a* = 8.9057(10) *b* = 5.7294(6) *c* = 10.1134(11) β = 113.713(5)° *Z* = 2

X-Ray Diffraction Pattern: Monte Maniglia, Bellino, Varaita Valley, Cuneo Province, Italy. 2.899 (s), 2.711 (ms), 3.516 (m), 2.621 (m), 2.109 (m), 2.179 (mw), 2.165 (mw)

Chemistry:	(1)	(2)
SiO ₂	30.69	29.59
Al ₂ O ₃	10.39	8.37
V ₂ O ₃	0.17	
Fe ₂ O ₃	3.87	
Y ₂ O ₃	0.17	
La ₂ O ₃	14.61	26.75
Ce ₂ O ₃	1.88	
Pr ₂ O ₃	2.04	
Nd ₂ O ₃	2.21	
Gd ₂ O ₃	0.10	
MgO	0.88	
CaO	8.28	9.21
MnO _{total}	21.58	
MnO	[11.98]	11.65
Mn ₂ O ₃	[10.69]	12.96
H ₂ O	[1.5]	1.48
Total	99.50	100.01

(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)}(Ca_{0.62}Mn_{0.38})^{A(2)}(La_{0.52}Nd_{0.08}Pr_{0.07}Ce_{0.07}Y_{0.01}Ca_{0.25})^{M(1)}(Mn³⁺_{0.52}Fe³⁺_{0.28}Al_{0.18}V³⁺_{0.01})^{M(2)}Al_{1.00}^{M(3)}(Mn²⁺_{0.60}Mn³⁺_{0.27}Mg_{0.13})^{T(1-3)}(Si_{2.99}Al_{0.01})O₁₂(OH). (2) CaLa(Mn³⁺AlMn²⁺)[Si₂O₇][SiO₄]O(OH).

Mineral Group: Epidote supergroup, allanite group.

Occurrence: In a manganese deposit in metasedimentary rocks.

Association: Pyroxmangite.

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 (19907).

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.