Ferriandrosite-(La) $Mn^{2+}La^{3+}Fe^{3+}AlMn^{2+}(Si_2O_7)(SiO_4)O(OH)$

Crystal Data: Monoclinic. *Point Group*: 2/*m*. As prismatic crystals elongated along [010] to 150 μm.

Physical Properties: *Cleavage*: Imperfect on {001}. *Fracture*: n.d. *Tenacity*: Brittle. Hardness = n.d. D(meas.) = n.d. D(calc.) = 4.23

Optical Properties: Translucent. *Color*: Dark brown. *Streak*: n.d. *Luster*: Vitreous. *Optical Class*: n.d.

Cell Data: *Space Group*: $P2_1/m$. a = 8.8779(1) b = 5.73995(1) c = 10.0875(2) β = 113.899(1)° Z = 2

X-ray Powder Pattern: Calculated pattern.
2.900 (100), 2.615 (53), 3.510 (46), 2.870 (40), 2.710 (35), 2.706 (35), 2.573 (26)

Chemistry:	(1)	(2)		(1)	(2)
SiO_2	29.25	28.85	Y_2O_3	0.01	
TiO_2	0.86		La_2O_3	12.97	26.07
Al_2O_3	9.61	8.16	Ce_2O_3	5.25	
Cr_2O_3	0.08		Pr_2O_3	2.05	
V_2O_3	3.40		Nd_2O_3	5.16	
Fe_2O_3	[5.48]	12.78	Gd_2O_3	0.48	
FeO	[5.23]		Er_2O_3	0.01	
MnO	12.05	22.70	F	0.28	
NiO	0.02		$-O = F_2$	0.12	
MgO	0.65		H_2O	[3.01]	1.44
CaO	4.26		Total	100.00	100.00
SrO	0.04				

(1) Shobu area, Ise City, Mie Prefecture, Japan; average of 3 electron microprobe analyses, FeO and Fe_2O_3 calculated for charge balance, H_2O by difference; corresponding to $^{A1}(Mn^{2+}_{0.56}Ca_{0.44})$ $^{A2}[(La_{0.49}Ce_{0.20}Pr_{0.08}Nd_{0.19}Gd_{0.02})_{\Sigma=0.97}Ca_{0.03}]^{M1}(Fe^{3+}_{0.40}V^{3+}_{0.28}Al_{0.20}Fe^{2+}_{0.05}Ti^{4+}_{0.07})^{M2}(Al_{0.97}Fe^{3+}_{0.03})$ $^{M3}(Mn^{2+}_{0.50}Fe^{2+}_{0.40}Mg_{0.10})(SiO_4)(Si_2O_7)O(OH)$. (2) $Mn^{2+}La^{3+}Fe^{3+}AlMn^{2+}(Si_2O_7)(SiO_4)O(OH)$.

Mineral Group: Epidote supergroup, allanite group.

Occurrence: In tephroite-calcite veinlets cutting a stratiform ferromanganese deposit.

Association: Ferriakasakaite-(La), rhodochrosite, bementite, allanite-group minerals.

Distribution: From the Shobu area, Ise City, Mie Prefecture, Japan.

Name: For a member of the allanite group with dominant Mn^{2+} in the *A1* site and Fe^{3+} in the *M1* site, and a suffix for the dominant rare earth element.

Type Material: National Museum of Nature and Science, Tokyo, Japan (NSM M-43919, M-43920).

References: (1) Nagashima, M., D. Nishio-Hamane, N. Tomita, T. Minakawa, and S. Inaba (2015) Ferriakasakaite-(La) and ferriandrosite-(La): New epidote supergroup minerals from Ise, Mie Prefecture, Japan. Mineral. Mag., 79(3), 735-753. (2) (2016) Amer. Mineral., 101, 1712 (abs. ref. 1).