

**Vanadoallanite-(La)**

**Crystal Data:** Monoclinic. *Point Group:* 2/m. As prismatic crystals to 300 μm elongated along [010].

**Physical Properties:** *Cleavage:* Imperfect on {001}. *Fracture:* n.d. *Tenacity:* Brittle. Hardness = n.d. D(meas.) = n.d. D(calc.) = 4.15

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

**Cell Data:** *Space Group:* P2<sub>1</sub>/m. *a* = 8.8985(2) *b* = 5.7650(1) *c* = 10.1185(2) *β* = 114.120(1)° *Z* = 2

**X-ray Powder Pattern:** Calculated pattern.

2.910 (100), 2.621 (53), 3.521 (49), 2.883 (38), 2.716 (37), 2.715 (36), 7.908 (27)

<b>Chemistry:</b>	(1)		(1)
SiO <sub>2</sub>	29.97	SrO	0.16
TiO <sub>2</sub>	1.01	Y <sub>2</sub> O <sub>3</sub>	0.02
Al <sub>2</sub> O <sub>3</sub>	7.64	La <sub>2</sub> O <sub>3</sub>	12.14
Cr <sub>2</sub> O <sub>3</sub>	0.16	Ce <sub>2</sub> O <sub>3</sub>	3.75
V <sub>2</sub> O <sub>3</sub>	7.64	Pr <sub>2</sub> O <sub>3</sub>	1.86
FeO	[6.94]	Nd <sub>2</sub> O <sub>3</sub>	4.94
Fe <sub>2</sub> O <sub>3</sub>	[5.47]	Er <sub>2</sub> O <sub>3</sub>	0.09
MnO	8.03	F	0.07
NiO	0.05	-O = F <sub>2</sub>	0.03
MgO	0.39	<u>H<sub>2</sub>O</u>	<u>[2.75]</u>
CaO	6.97	Total	97.25

(1) Shobu area, Ise City, Mie Prefecture, Japan; average of 3 electron microprobe analyses, H<sub>2</sub>O by difference, Fe<sup>2+</sup>/Fe<sup>3+</sup> calculated for charge balance; corresponding to (Ca<sub>0.75</sub>Sr<sub>0.01</sub>La<sub>0.45</sub>Ce<sub>0.14</sub>Pr<sub>0.07</sub>Nd<sub>0.18</sub>Mn<sup>2+</sup><sub>0.38</sub>)<sub>Σ=1.98</sub>(Mn<sup>2+</sup><sub>0.31</sub>Mg<sub>0.06</sub>Fe<sub>1.00</sub>V<sup>3+</sup><sub>0.63</sub>Cr<sub>0.01</sub>Al<sub>0.91</sub>Ti<sub>0.08</sub>)<sub>Σ=3.00</sub>Si<sub>3.02</sub>O<sub>12</sub>(OH)<sub>0.98</sub>F<sub>0.02</sub>.

**Mineral Group:** Epidote supergroup, allanite subgroup.

**Occurrence:** In a vein cutting a stratiform ferromanganese deposit.

**Association:** Rhodochrosite, tephroite, magnetite, hematite, caryopilite, monazite-(La), chalcopyrite, pentlandite, heazlewoodite, bementite, iselite.

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

**Name:** For a member of the *allanite* group with dominant *vanadium* in the *M1* site and suffix for the dominant rare earth element, *lanthanum*.

**Type Material:** National Museum of Nature and Science, Tokyo, Japan (M-43737).

**References:** (1) Nagashima, M., D. Nishio-Hamane, N. Tomita, T. Minakawa, and S. Inaba (2013) Vanadoallanite-(La): a new epidote-supergroup mineral from Ise, Mie Prefecture, Japan. *Mineral. Mag.*, 77(6), 2739-2752. (2) (2015) *Amer. Mineral.*, 100, 2362 (abs. ref. 1).