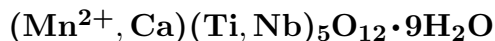


Manganbelyankinite



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Crystal Data: Amorphous. *Point Group:* n.d. *Massive.*

Physical Properties: Hardness = [2–3] (by analogy to belyankinite). $D(\text{meas.}) = 2.54$
 $D(\text{calc.}) = \text{n.d.}$

Optical Properties: Semitransparent. *Color:* Brownish black. *Luster:* Resinous.
Optical Class: Biaxial (-). *Pleochroism:* Noted. $\alpha = \text{n.d.}$ $\beta = \text{n.d.}$ $\gamma = \text{n.d.}$
 $2V(\text{meas.}) = 29^\circ$

Cell Data: *Space Group:* n.d. $Z = \text{n.d.}$

X-ray Powder Pattern: Lovozero massif, Russia; after heating at 900 °C.
1.692 (4), 2.48 (3), 3.21 (2), 2.89 (2), 2.17 (1), 1.880 (1)

Chemistry:	(1)	(2)
Nb ₂ O ₅	7.42	7.86
SiO ₂	1.51	3.34
TiO ₂	44.30	44.32
ZrO ₂		3.06
MnO ₂	14.03	6.45
Al ₂ O ₃		0.60
Fe ₂ O ₃	3.77	4.12
MgO		1.10
CaO	5.77	6.00
K ₂ O		0.90
H ₂ O ⁺	22.36	9.09
H ₂ O ⁻		13.61
P ₂ O ₅		0.23
Total	99.16	100.68

(1) Lovozero massif, Russia; corresponds to $(\text{Mn}, \text{Ca})_{1.9}(\text{Ti}, \text{Nb})_5\text{O}_{12} \cdot 9\text{H}_2\text{O}$. (2) Do.

Polymorphism & Series: Forms two series, with belyankinite, and with gerasimovskite.

Occurrence: In pegmatite.

Association: n.d.

Distribution: On Mts. Kedykverpakhk and Punkaruaiiv, Lovozero massif, Kola Peninsula, Russia.

Name: For its MANGANEse content, and relation to *belyankinite*.

Type Material: A.E. Fersman Mineralogical Museum, Academy of Sciences, Moscow, Russia, vis6437.

References: (1) E.I. Semenov (1957) Oxides and hydroxides of titanium and niobium in the Lovozero alkalic massif. *Inst. mineral., geokhim., and crystallokhim. redkikh elementov, Trudy*, 1, 41–59 (in Russian). (2) (1958) *Amer. Mineral.*, 43, 1220–1221 (abs. ref. 1). (3) Vlasov, K.A., M.V. Kuz'menko, and E.M. Es'kova (1966) The Lovozero alkali massif. *Akad. Nauk SSSR*, 390–392 (in English).