

Crystal Data: Monoclinic. *Point Group:* 2/m. Equant crystals display {001}, {311̄}, {111̄} and {110} to 1 mm. *Twinning:* Common by 180° rotation around [102].

Physical Properties: *Cleavage:* None. *Fracture:* Irregular. *Tenacity:* Brittle. Hardness = 2-2.5 D(meas.) = 3.10(1) D(calc.) = 3.05

Optical Properties: Transparent to translucent. *Color:* Orange. *Streak:* Pale orange. *Luster:* Vitreous to resinous.

Optical Class: Biaxial (-). $\alpha = 1.760(5)$ $\beta = 1.795(5)$ $\gamma = 1.800(5)$ $2V(\text{meas.}) = 43(2)^\circ$ $2V(\text{calc.}) = 40.7^\circ$ *Dispersion:* Strong, $r < v$. *Pleochroism:* Pronounced; Z = pale orange, Y = medium orange, X = colorless. *Absorption:* $X < Z \ll Y$. *Orientation:* $X \approx c$, $Y \approx a^*$, $Z \approx b$.

Cell Data: *Space Group:* C2/m. $a = 15.3444(3)$ $b = 9.4158(2)$ $c = 11.2858(4)$ $\beta = 118.632(1)^\circ$ Z = 2

X-ray Powder Pattern: AS Granit larvikite quarry, Tvedalen, Larvik, Vestfold, Norway. 2.9260 (100), 9.8977 (82), 7.1026 (63), 7.7104 (42), 7.4689 (39), 3.3007 (38), 3.4102 (30)

Chemistry:	(1)	(2)
Nb ₂ O ₅	56.8	59.80
SiO ₂	0.11	
MnO	21.5	21.28
FeO	0.6	
CaO	0.21	
Na ₂ O	0.07	
H ₂ O	[18.87]	18.92
Total	98.16	100.00

(1) AS Granit larvikite quarry, Tvedalen, Larvik, Vestfold, Norway; average of 4 electron microprobe analyses supplemented by TGA, H₂O from stoichiometry; corresponding to (Mn_{3.92}Ca_{0.05}Na_{0.03}) $\Sigma=4.01$ (Nb_{5.71}Mn_{0.13}Fe_{0.12}Si_{0.03}) $\Sigma=5.99$ O_{18.57}·14H₂O. (2) Mn₄Nb₆O₁₉·14H₂O.

Occurrence: Formed at the hydrothermal stage on fracture surfaces and in tiny vugs in the center of a miaskitic pegmatite dike within the larvikites of a plutonic complex.

Association: Analcime, fluorapophyllite-(K), arsenopyrite, behoite, bertrandite, calcite, chiavennite, chlorite, epididymite, Mn²⁺-rich fayalite, fluorite, galena, gonnardite, hambergite, luinaite-(OH), molybdenite, natrolite, neotocite.

Distribution: From the AS Granit larvikite (quarry level 4), Tvedalen, Larvik, Vestfold, Norway.

Name: Honors Peter Andresen (b. 1971), the mineral collector who first found the mineral.

Type Material: Natural History Museum, University of Oslo, Norway (43490) and the Natural History Museum of Los Angeles County, Los Angeles, California, USA (64008).

References: (1) Friis, H., A.O. Larsen, A.R. Kampf, R.J. Evans, R.S. Selbekk, A.A. Sánchez, and J. Kihle (2014) Peterandresenite, Mn₄Nb₆O₁₉·14H₂O, a new mineral containing the Lindqvist ion from a syenite pegmatite of the Larvik Plutonic Complex, southern Norway. *Eur. J. Mineral.*, 26(4), 567-576. (2) (2016) *Amer. Mineral.*, 101, 1494-1495 (abs. ref. 1).