Innsbruckite $Mn_{33}(Si_2O_5)_{14}(OH)_{38}$

Crystal Data: Monoclinic. *Point Group*: *m.* As thin crystals, platy on {001}, which appear needle-like in thin section, to 150 μm.

Physical Properties: *Cleavage*: n.d. *Fracture*: n.d. *Tenacity*: n.d. Hardness = 6
D(meas.) = n.d. D(calc.) = 3.216

Optical Properties: Transparent. *Color*: Nearly colorless in transmitted light. *Streak*: n.d. *Luster*: n.d.
Optical Class: Biaxial (-). *n*(calc.) = 1.678 2V(meas.) = Small. *Pleochroism*: Weak.

Cell Data: *Space Group*: *Cm*. a = 17.2760(19) b = 35.957(5) c = 7.2560(8) β = 91.359(7)° Z = 2

X-ray Powder Pattern: Figure 7 (ref 1) provides a calculated diffractogram without a table of d-values.

Chemistry:	(1)	(2)
SiO_2	38.65	38.54
Al_2O_3	0.23	
FeO	0.32	
MnO	51.8	53.62
MgO	1.20	
Cl	0.02	
$-O = Cl_2$	0.00	
H_2O	[7.91]	7.84
Total	100.12	100.00

(1) Navis valley,Tyrol, Austria; average of 5 electron microprobe analyses, H_2O calculated from structure analysis, OH confirmed by Raman spectroscopy; corresponds to $Mn_{31.58}Fe_{0.19}Mg_{1.29}Si_{27.82}Al_{0.20}O_{108}H_{37.97}$. (2) $Mn_{33}(Si_2O_5)_{14}(OH)_{38}$.

Mineral Group: Single-layer silicate.

Occurrence: Between serpentinite and chert, related to a late hydration stage after blueschist-facies metamorphism of former Mn-rich marine sediments.

Association: Rhodochrosite, friedelite, tephroite, spessartine, calcite, apatite, barite.

Distribution: Near Staffelsee (Geier), Navis valley, 20 km southeast of Innsbruck, Tyrol, Austria.

Name: For *Innsbruck*, Austria, a city near where the first specimens were collected.

Type Material: Museum of Natural History, Vienna, Austria (N 9580).

References: (1) Krüger, H., P. Tropper, U. Haefeker, R. Kaindl, M. Tribus, V. Kahlenberg, C. Wikete, M.R. Fuchs, and V. Olieric (2014) Innsbruckite, $Mn_{33}(Si_2O_5)_{14}(OH)_{38}$ - a new mineral from the Tyrol, Austria. Mineral. Mag., 78(7), 1613-1627. (2) (2015) Amer. Mineral., 100, 2009 (abs. ref. 1).