Princivalleite $Na(Mn_2Al)Al_6(Si_6O_{18})(BO_3)_3(OH)_3O$

Crystal Data: Hexagonal. *Point Group*: 3*m*. As subhedral crystals to ~10 mm.

Physical Properties: *Cleavage*: n.d. *Tenacity*: Brittle. *Fracture*: Conchoidal.
Hardness = ~7 D(meas.) = n.d. D(calc.) = 3.168 No fluorescence.

Optical Properties: Transparent. *Color*: Azure. *Streak*: White. *Luster*: Vitreous.
Optical Class: Uniaxial (-). ω = 1.650(5) ε = 1.635(5)

Cell Data: *Space Group: R*3*m*. *a* = 15.9155(2) *c* = 7.11660(10) Z = 3

X-Ray Diffraction Pattern: Curiglia, Veddasca Valley, Luino (Varese), Lombardy, Italy.
2.567 (100), 2.934 (78), 3.441 (67), 2.028 (51), 3.974 (50), 4.198 (43), 1.908 (41)

Chemistry:

	(1)
SiO_2	33.71
B_2O_3	10.46
Al_2O_3	41.19
FeO	2.29
MnO	5.96
MgO	0.08
ZnO	0.55
CaO	0.60
Na_2O	1.68
Li_2O	0.12
F	0.42
H_2O	2.55
-O = F	0.18
Total	99.45

(1) Curiglia village, Veddasca valley, Lombardy, Italy; average electron microprobe analysis supplemented by Mössbauer and μ-laser induced breakdown spectroscopy, H_2O and B_2O_3 calculated from stoichiometry; corresponding to $^{X}(Na_{0.54}Ca_{0.11}\square_{0.35})_{\Sigma=1.00}{}^{Y}(Al_{1.67}Mn^{2+}_{0.84}Fe^{2+}_{0.32}Zn_{0.07}Mg_{0.02}Li_{0.08})_{\Sigma=3.00}{}^{Z}Al_{6.00}[{}^{T}(Si_{5.60}Al_{0.40})_{\Sigma=6.00}O_{18}](BO_3)_3{}^{V}[(OH)_{2.71}O_{0.29}]_{\Sigma=3.00}{}^{W}[O_{0.66}F_{0.22}(OH)_{0.12}]_{\Sigma=1.00}$.

Polymorphism & Series: Substitutionally related to oxy-schorl and darrellhenryite.

Mineral Group: Tourmaline supergroup, alkali group. Na-dominant at the *X* position, oxy-dominant at *W*, O^{2-} > (F + OH), and Al^{3+} dominant at *Z*.

Occurrence: At the center of a 3 cm wide pegmatitic vein, cross cutting a lens of flaser gneiss. Likely from a B-rich and peraluminous anatectic pegmatitic melt formed in situ, poor in Fe and characterized by reducing conditions in late-stage metamorphic fluids.

Association: Oxy-schorl, muscovite, quartz, albitic plagioclase, K-feldspar, pyrite, cordierite.

Distribution: From a road cut on the eastern side of Curiglia village, Veddasca valley, Luino (Varese), Lombardy, Italy.

Name: Honors Francesco *Princivalle* (b. 1956), Professor of Mineralogy, Department of Mathematics and Geosciences, University of Trieste, Italy, for contributions to the crystal chemistry and geothermometery of the spinel, olivine, and pyroxene mineral groups.

Type Material: Museum of Natural History, Milan, Italy (M38850).

References: (1) Bosi, F., F. Pezzotta, H. Skogby, A. Altieri, U. Hålenius, G. Tempesta, and J. Cempírek (2022) Princivalleite, $Na(Mn_2Al)Al_6(Si_6O_{18})(BO_3)_3(OH)_3O$, a new mineral species of the tourmaline supergroup from Veddasca Valley, Varese, Italy. Mineral. Mag., 86, 78-86.