

Crystal Data: Hexagonal. *Point Group:* 3m. As zones, <1 mm), near the rims of larger, chemically zoned tourmaline crystals (Canada). As euhedral prismatic crystals, to 3 mm (Italy).

Physical Properties: *Cleavage:* None. *Tenacity:* Brittle. *Fracture:* Conchoidal. Hardness = 7-8 D(meas.) = n.d. D(calc.) = 3.168-3.175

Optical Properties: Transparent. *Color:* Black, brownish to bluish. *Streak:* n.d. *Luster:* Vitreous. *Optical Class:* Uniaxial (-). $\omega = 1.668(3)$ $\varepsilon = 1.644(3)$ (Canada); $\omega = 1.665(5)$ $\varepsilon = 1.645(5)$ (Italy). *Pleochroism:* *O* = dark brown, *E* = colorless (Canada); *O* = greenish-blue, *E* = yellowish-brown (Italy). *Absorption:* *O* >> *E*.

Cell Data: *Space Group:* R3m. $a = 15.9910(3)$ $c = 7.2224(2)$ (Canada); $a = 15.9270(10)$ $c = 7.1270(5)$ (Italy) $Z = 3$

X-ray Powder Pattern: Calculated pattern.

2.586 (100), 2.972 (70), 3.998 (58), 4.238 (54), 3.494 (46), 2.048 (46), 6.404 (32)

Chemistry:	(1)	(2)	(3)
SiO ₂	35.23	30.26	36.98
TiO ₂	1.92		
B ₂ O ₃	[10.23]	[10.41]	10.71
Al ₂ O ₃	26.63	39.30	31.38
V ₂ O ₃	0.08		
Cr ₂ O ₃	0.10		
Fe ₂ O ₃	[6.14]	[2.86]	
FeO	[4.34]	[2.90]	
FeO(total)	9.87	5.47	
MgO	7.96	5.82	12.41
CaO	3.27	4.93	5.75
Na ₂ O	1.19	0.37	
K ₂ O	0.04		
F	0.41	0.04	
H ₂ O	[2.29]	[2.60]	2.77
- O = F	0.17	0.02	.
Total	99.67	99.47	100.00

(1) O'Grady Batholith, Canada; electron microprobe analysis supplemented by Mössbauer spectroscopy, H₂O calculated based on stoichiometry, Fe³⁺/Fe(total) ratio calculated from bond-valence site occupancy optimization of the formula; corresponding to ^X(Ca_{0.60}Na_{0.39}K_{0.01})_{Σ=1.00} ^Y(Mg_{2.02}Fe²⁺_{0.62}Fe³⁺_{0.09}Ti_{0.25}V_{0.01}Cr_{0.01})_{Σ=3.00} ^Z(Al_{5.31}Fe³⁺_{0.69})_{Σ=6.00} [^T(Si_{5.98}Al_{0.02})_{Σ=6.00}O₁₈](BO₃)₃ ^V[(OH)_{2.59}O_{0.41}]_{Σ=3.00} ^W(O_{0.78}F_{0.22})_{Σ=1.00}. (2) Elba Island, Livorno, Tuscany, Italy; electron microprobe analysis supplemented by Mössbauer spectroscopy, H₂O calculated based on stoichiometry, Fe³⁺/Fe²⁺ from Mössbauer analysis; corresponds to ^X(Ca_{0.88}Na_{0.12})_{Σ=1.00} ^Y(Al_{0.79}Fe³⁺_{0.36}Mg_{1.45}Fe²⁺_{0.40})_{Σ=3.00} ^ZAl₆ [^T(Si_{5.05}Al_{0.95})_{Σ=6.00}O₁₈](BO₃)₃ ^V[(OH)_{2.90}O_{0.10}]_{Σ=3.00} ^W(O_{0.98}F_{0.02})_{Σ=1.00}. (3) CaMg₃Al₆(Si₆O₁₈)(BO₃)₃(OH)₃O.

Mineral Group: Tourmaline supergroup, calcic-subgroup 3 of the calcic group.

Occurrence: Within a lamprophyre dike that crosscuts tourmaline-rich metapelites within the exocontact of a batholith (Canada); in hydrothermal veins embedded in meta-serpentinites within the contact aureole of a monzogranite intrusion (Italy).

Association: Uvitic tourmaline, feruvite, fluor-uvite, dravite (Canada); chlorite, mica, titanite, pyrite (Italy).

Distribution: Near the O'Grady Batholith, Nááts'ihch'oh National Park Reserve, Northwest Territories, Canada and near the contact of the Monte Capanne intrusion, tens of meters south of San Piero in Campo, Elba Island, Livorno, Tuscany, Italy.

Name: Prefix, *magnesio*, indicates the dominance of Mg over Fe at the *Y* site in an analog of *lucchesiite*.

Type Material: Canadian Museum of Nature in Ottawa, Ontario, Canada (CMNMC 87266), the Natural History Museum, University of Pisa, Italy (15921), and the Swedish Museum of Natural History, Stockholm (NRM#20190127).

References: (1) Scribner, E.D., J. Cempírek, L.A. Groat, R.J. Evans, C. Biagioni, F. Bosi, A. Dini, U. Hålenius, P. Orlandi, and M. Pasero (2021) Magnesio-lucchesiite, $\text{CaMg}_3\text{Al}_6(\text{Si}_6\text{O}_{18})(\text{BO}_3)_3(\text{OH})_3\text{O}$, a new species of the tourmaline supergroup. *Amer. Mineral.*, 106, 862-871.