Oxy-dravite $Na(Al_2Mg)(Al_5Mg)(Si_6O_{18})(BO_3)_3(OH)_3O$

Crystal Data: Hexagonal. *Point Group*: 3*m*. As prismatic crystals to 15 mm.

Physical Properties: *Cleavage*: [Poor/indistinct on {0001}.] *Fracture*: Conchoidal. *Tenacity*: Brittle. Hardness = ~ 7 D(meas.) = n.d. D(calc.) = 3.073

Optical Properties: Translucent. *Color*: Dark red. *Streak*: Pink. *Luster*: Vitreous. *Optical Class*: Uniaxial (–). ω = 1.650(5) ε = 1.620(5) *Pleochroism*: *O* = orange; *E* = pink.

Cell Data: *Space Group*: *R*3*m*. *a* = 15.9273(2) *c* = 7.2001(1) Z = 3

X-ray Powder Pattern: Osarara, Narok district, Kenya.
2.963 (100), 3.483 (84), 2.576 (68), 4.222 (67), 3.983 (64), 1.915 (52), 6.377 (44)

Chemistry:	(1)		(1)
SiO_2	37.01	MgO	8.56
TiO_2	0.14	Na_2O	2.65
B_2O_3	[10.76]	K_2O	0.10
Al_2O_3	33.11	H_2O	[2.65]
Fe_2O_3	5.00	Total	101.58
FeO	0.19		

(1) Osarara, Narok district, Kenya; average of 10 electron microprobe analyses supplemented by Mössbauer spectrometry, B_2O_3 and H_2O calculated from stoichiometry; corresponds to $^{X}(Na_{0.83}\square_{0.15}K_{0.02})_{\Sigma=1.00}{}^{Y}(Al_{1.34}Fe^{3+}_{0.58}Mg_{1.03}Fe^{2+}_{0.03}Ti_{0.02})_{\Sigma=3.00}{}^{Z}(Al_{4.95}Mg_{1.03}Fe^{3+}_{0.02})_{\Sigma=6.00}$ $^{T}(Si_{5.98}Al_{0.02}O_{18})_{\Sigma=6.00}{}^{B}(BO_3)_3{}^{V}(OH)_3{}^{W}[O_{0.76}(OH)_{0.24}]_{\Sigma=1.00}$, which shows the Mg-Al order-disorder in the Y and Z sites.

Polymorphism & Series: Oxy-dravite is related to oxy-schorl, oxy-chromium-dravite, oxy-vanadium-dravite, and povondraite through the substitution of Mg^{2+} for Fe^{2+}, Al^{3+} for Cr^{3+}, Al^{3+} for V^{3+}, and Al^{3+} for Fe^{3+}, respectively.

Mineral Group: Tourmaline supergroup, alkali-subgroup 3.

Occurrence: In quartz-muscovite schist.

Association: Quartz, muscovite.

Distribution: From Osarara, Narok district, Kenya.

Name: As a dravite with $Al^{3+} + O^{2-} \rightarrow Mg^{2+} + (OH)^{1-}$ relative to the composition of dravite.

Type Material: Museum of Mineralogy, Earth Sciences Department, Sapienza University of Rome, Italy (33066).

References: (1) Bosi, F. and H. Skogby (2013) Oxy-dravite, $Na(Al_2Mg)(Al_5Mg)(Si_6O_{18})(BO_3)_3(OH)_3O$, a new mineral species of the tourmaline supergroup. Amer. Mineral., 98, 1442-1448.