Windhoekite $Ca_2Fe^{3+}_{3-x}[Si_8O_{20}](OH)_4 \cdot 10H_2O$

Crystal Data: Monoclinic. *Point Group*: 2/*m*. As isolated prismatic crystals to 4 mm capped by epitaxial overgrowths of palygorskite and in radial aggregates to 5 mm.

Physical Properties: *Cleavage*: Perfect on {100}. *Tenacity*: Sectile. *Fracture*: n.d. Hardness = 2 D(meas.) = 2.62(2) D(calc.) = 2.630

Optical Properties: Translucent. *Color*: Yellowish brown. *Streak*: Beige.
Luster: Vitreous or silky.
Optical Class: Biaxial (-). $\alpha = 1.610(3)$ $\beta = 1.662(3)$ $\gamma = 1.671(3)$ 2V(meas.) = 50(10)°
2V(calc.) = 44° *Pleochroism*: Strong, brown to dark brown. *Orientation*: $X \approx a$, $Z = c$.
Absorption: $Y \approx Z > X$.

Cell Data: *Space Group*: *C*2/*m*. $a = 14.319(5)$ $b = 17.825(4)$ $c = 5.242(1)$ $\beta = 103.5(2)°$ Z = 2

X-Ray Diffraction Pattern: Ariskop Quarry, Aris, near Windhoek, Khomas Region, Namibia.
11.04 (100), 3.486 (11), 4.432 (10), 2.636 (8), 4.133 (6), 2.505 (6), 3.754 (4)

Chemistry:

	(1)	(2)
CaO	9.24	10.97
MnO	0.85	
Fe_2O_3	23.14	20.86
Al_2O_3	0.41	
SiO_2	46.32	47.03
H_2O	21.0	21.15
Total	100.96	100.01

(1) Ariskop Quarry, Aris, near Windhoek, Khomas Region, Namibia; average electron microprobe analysis supplemented by IR spectroscopy, H_2O by gas chromatography; corresponds to $(Ca_{1.68}Mn_{0.12})Fe^{3+}_{2.96}(Si_{7.87}Al_{0.08}O_{20})(OH)_4 \cdot 10H_{1.98}O$. (2) $Ca_2Fe_{2.67}(Si_8O_{20})(OH)_4 \cdot 10H_2O$.

Mineral Group: Palygorskite group.

Occurrence: In miarolitic cavities in alkaline phonolite.

Association: Fluorapophyllite, aegirine, microcline, arisite-(Ce), arisite-(La).

Distribution: From the Ariskop Quarry, Aris, near Windhoek, Khomas Region, Namibia.

Name: For *Windhoek*, the district of Namibia where the studied samples were collected.

Type Material: A.E. Fersman Mineralogical Museum, RAS, Moscow, Russia (4018/1).

References: (1) Chukanov, N.V., S.N. Britvin, G. Blass, D.I. Belakovskiy, and K.V Van (2012) Windhoekite, $Ca_2Fe^{3+}_{3-x}(Si_8O_{20})(OH)_4 \cdot 10H_2O$, a new palygorskite-group mineral from the Aris phonolite, Namibia. Eur. J. Mineral., 24, 171-179.