Sabieite $(NH_4)Fe^{3+}(SO_4)_2$

Crystal Data: Hexagonal. *Point Group:* 32. Thin platelets, hexagonal, to 10 μm, constituting a powder.

Physical Properties: Hardness = n.d. D(meas.) = n.d. D(calc.) = [2.36] Slowly soluble in H_2O.

Optical Properties: Semitransparent. *Color:* White.
Optical Class: Uniaxial. ω = n.d. ϵ = n.d.

Cell Data: *Space Group:* [$P321$] (by analogy to synthetic). $a = 4.822$ $c = 8.1696$ Z = 1

X-ray Powder Pattern: Lone Creek Fall Cave, South Africa.
8.19 (100), 2.409 (30), 3.72 (20), 1.392 (20), 1.556 (15), 2.910 (10), 2.718 (10)

Chemistry:

	(1)	(2)
SO_3	61.80	60.19
Al_2O_3	0.68	
Fe_2O_3	28.64	30.02
K_2O	0.70	
$(NH_4)_2O$	8.18	9.79
Total	100.80	[100.00]

(1) Lone Creek Fall Cave, South Africa; recalculated to 100% from an original total of 100.80% after deduction of 12.77% insoluble; then corresponds to $[(NH_4)_{0.84}K_{0.04}]_{\Sigma=0.88}(Fe_{0.94}Al_{0.04})_{\Sigma=0.98}(S_{1.02}O_4)_2$. (2) $(NH_4)Fe(SO_4)_2$.

Occurrence: Formed by dehydration of lonecreekite.

Association: Lonecreekite, tschermigite.

Distribution: On the ceiling of Lone Creek Fall Cave, near Sabie, Eastern Transvaal, South Africa.

Name: For its occurrence near Sabie, South Africa.

Type Material: South African Geological Survey Museum, Pretoria, South Africa.

References: (1) Martini, J.E.J. (1983) Lonecreekite, sabieite, and clairite, new secondary ammonium ferric-iron sulphates from Lone Creek Fall Cave, near Sabie, Eastern Transvaal. Ann. Geol. Surv. S. Africa, 17, 29–34. (2) (1986) Amer. Mineral., 71, 229 (abs. ref. 1).