Ferrotaaffeite-2*N′*2*S* $BeFe_3Al_8O_{16}$

Crystal Data: Hexagonal. *Point Group*: 6*mm*. As tabular crystals to 100 μm.

Physical Properties: *Cleavage*: Fair on {001}. *Fracture*: Conchoidal. *Tenacity*: Brittle. Hardness = 8.5-9 VHN = 2107 (50 g load). D(meas.) = n.d. D(calc.) = 3.99

Optical Properties: Transparent. *Color*: Dark green to dark gray. *Streak*: White. *Luster*: Vitreous.
Optical Class: Uniaxial (+). ω = 1.402(1) ε = 1.408(1)

Cell Data: *Space Group*: $P6_3mc$. a = 5.6978(8) b = 5.6978(8) c = 18.373(4) Z = 2

X-ray Powder Pattern: Xianghualing ore field, Hunan Province, People's Republic of China. 2.43 (100), 2.60 (90), 1.425 (90), 2.86 (80), 1.473 (80), 2.05 (70), 1.595 (70)

Chemistry:

	(1)
SiO_2	0.03
TiO_2	0.02
SnO_2	0.61
Al_2O_3	66.69
Cr_2O_3	0.02
FeO	16.37
MgO	6.41
ZnO	5.56
MnO	1.97
CaO	0.02
BaO	0.01
BeO	[4.09]
Total	101.80

(1) Xianghualing ore field, Hunan Province, People's Republic of China, average of 23 electron microprobe analyses, BeO calculated from stoichiometry; corresponds to $Be(Fe_{1.39}Mg_{0.97}Zn_{0.42}Mn_{0.17}Sn_{0.03})_{\Sigma=2.98}Al_{7.99}O_{16}$.

Mineral Group: Taaffeite group.

Occurrence: In a contact metamorphic skarn zone.

Association: Fe^{2+}-rich magnesiotaaffeite-2*N′*2*S*, ferronigerite-2*N*1*S*, cassiterite, liberite, pyrite, sphalerite, pyrrhotite, galena, spinel, phlogopite.

Distribution: Xianghualing Sn-polymetallic ore field, Linwu County, Hunan Province, People's Republic of China.

Name: Identifies a member in the *taaffeite* group with a structure based on spinel (*S*) and nolanite (*N*) modules and with $Fe^{2+} > Mg^{2+}$.

Type Material: Museum of the Institute of Geology and Geophysics, Chinese Academy of Sciences, Beijing, People's Republic of China (KDX017).

References: (1) Yang, Z., K. Ding, J. De Fourestier, Q. Mao, and H. Li (2012) Ferrotaaffeite-2*N′*2*S*, a new mineral species, and the crystal structure of Fe^{2+}-rich magnesiotaaffeite-2*N′*2*S* from the Xianghualing tin-polymetallic ore field, Hunan Province, China. Can. Mineral., 50, 21-29.
(2) (2014) Amer. Mineral., 99, 1514 (abs. ref. 1).