

Crystal Data: Hexagonal. *Point Group:* $\bar{3} 2/m$. Crystals rarely well-formed, tabular, with $\{0001\}$ and $\{h0hl\}$; commonly granular, to 2 mm, in dendritic aggregates.

Physical Properties: *Cleavage:* One, imperfect. Hardness = ~ 2.3 VHN = 107
 $D(\text{meas.}) = 3.927 \quad D(\text{calc.}) = 3.925$

Optical Properties: Transparent. *Color:* Brownish red to dark brown when oxidized; deep red in transmitted light, with anomalous red interference colors. *Streak:* Pale yellow. *Luster:* Vitreous.
Optical Class: Uniaxial (-). $\omega = 1.82 \quad \varepsilon = 1.78$

Cell Data: *Space Group:* $R\bar{3} m$. $a = 10.2114(10) \quad c = 25.689(3) \quad Z = 3$

X-ray Powder Pattern: Nanling area, China.
 2.78 (10), 8.35 (9), 1.730 (8), 1.699 (8), 2.425 (7), 1.460 (7), 1.104 (6)

Chemistry:

(1)

Al ₂ O ₃	0.51
FeO	[3.95]
Fe ₂ O ₃	[1.31]
As ₂ O ₃	43.45
MnO	0.16
MgO	25.77
CaO	13.73
Na ₂ O	1.51
Li ₂ O	0.95
TiO ₂	0.28
F	14.36
H ₂ O	0.09
<u>- O = F₂</u>	<u>6.05</u>
Total	100.01

(1) Nanling area, China; average of 29 electron microprobe analyses supplemented by Mössbauer spectroscopy and SIMS; corresponds to $(\text{Na}_{0.90}\text{Li}_{0.10})_{\Sigma=1.00}(\text{Ca}_{4.41}\text{Li}_{1.06}\text{Mg}_{0.17}\text{Na}_{0.06}\text{Mn}_{0.05}\square_{0.25})_{\Sigma=6.00}(\text{Mg}_{11.38}\text{Fe}^{3+}_{0.30}\text{Al}_{0.29}\text{Ti}_{0.03})_{\Sigma=12.00}(\text{AsO}_3)_2[\text{Fe}^{2+}(\text{AsO}_3)_6][\text{F}_{13.77}(\text{OH})_{0.16}]_{\Sigma=13.93}$.

Occurrence: Along a contact between greisenized granite and dolomitic limestone.

Association: Fluorite, fluoborite, zinnwaldite, magnesian dolomite, arsenopyrite, pyrrhotite, gahnite, nigerite.

Distribution: From an undisclosed locality in the Nanling area, Hunan Province, southern China.

Name: For the locality, *Nanling* area, China, that produced the first samples.

Type Material: n.d.

References: (1) Gu Xiongfei, Ding Kuishou, and Xu Yingnian (1976) A new arsenite mineral from southern China. *Geochemica*, 2, 107-112 (in Chinese with English abs.). (2) (1977) *Amer. Mineral.*, 62, 1058-1059 (abs. ref. 1). (3) (1977) *Mineral. Abs.*, 28, 80-81 (abs. ref. 1). (4) Yang, Z., G. Giester, K. Ding, and E. Tillmanns (2011) Crystal structure of nanlingite - the first mineral with a $[\text{Fe}(\text{AsO}_3)_6]$ configuration. *Eur. J. Mineral.*, 23, 63-71. (5) (2012) *Amer. Mineral.*, 97, 2071 (abs. ref. 4)