Dixenite $Cu^{1+}Mn^{2+}_{14}Fe^{3+}(As^{3+}O_3)_5(As^{5+}O_4)(SiO_4)_2(OH)_6$

Crystal Data: Hexagonal. *Point Group:* 3. In aggregates of thin flakes; massive.

Physical Properties: *Cleavage:* Perfect, basal micaceous. Hardness = 3–4 D(meas.) = 4.36 D(calc.) = 4.375

Optical Properties: Translucent. *Color:* Deep red-brown to nearly black; intense red in thin sheets. *Luster:* Metallic to resinous.
Optical Class: Uniaxial (+). $n = 1.96(2)$

Cell Data: *Space Group: R*3. $a = 8.233(4)$ $c = 37.499(1)$ Z = 3

X-ray Powder Pattern: Långban, Sweden. (ICDD 19-426).
2.92 (100), 4.10 (90), 2.37 (80), 2.40 (55), 3.90 (50), 2.83 (50), 3.31 (45)

Chemistry:

	(1)
SiO_2	5.31
Fe_2O_3	3.75
Mn_2O_3	8.05
As_2O_3	32.16
MnO	43.35
CuO	3.49
MgO	0.32
CaO	0.39
Na_2O	0.13
K_2O	0.14
H_2O	2.80
P_2O_5	0.02
Total	99.91

(1) Långban, Sweden; cationic charges from structural study; corresponds to $Cu^{1+}_{0.85}(Mn^{2+}_{13.58}Mn^{3+}_{0.22}Mg_{0.15})_{\Sigma=13.95}Fe^{3+}_{0.91}As^{3+}_{4.99}As^{5+}_{1.30}Si_{1.71}O_{27}(OH)_6$.

Occurrence: In a metamorphosed Fe–Mn orebody in serpentine.

Association: Hematite, adelite, lead, domeykite, magnussonite.

Distribution: At Långban, Värmland, Sweden.

Name: From the Greek *di*, for *two*, and *xenos*, for *stranger*, in reference to the then unique association of silica and arsenious oxide in the mineral.

Type Material: n.d.

References: (1) Flink, G. (1920) Trigonit och dixenit, två nya mineral från Långbanshytte gruvor. Geol. Fören. Förhandl. Stockholm, 42, 436–439 (in Swedish). (2) (1921) Amer. Mineral., 6, 93 (abs. ref. 1). (3) Wickman, F.E. (1951) From the notes of the late K. Johansson. VII. A revised chemical analysis of dixenite from Långban. Geol. Fören. Förhandl. Stockholm, 73, 637–638. (4) Moore, P.B. and T. Araki (1981) Dixenite, $Cu^{1+}Mn^{2+}_{14}Fe^{3+}(OH)_6(As^{3+}O_3)_5(Si^{4+}O_4)_2(As^{5+}O_4)$: metallic $[As^{3+}_4Cu^{1+}]$ clusters in an oxide matrix. Amer. Mineral., 66, 1263–1273.