Schallerite $(Mn^{2+}, Fe^{2+})_{16}As_3^{3+}Si_{12}O_{36}(OH)_{17}$

Crystal Data: Hexagonal. *Point Group:* n.d. As markedly hemimorphic crystals, to 2 mm, having steep pyramids and terminated by dull {0001} and {000$\bar{1}$} pedions. As slightly rectangular aggregates resembling augen; also granular to massive.

Physical Properties: *Cleavage:* {0001}, perfect. Hardness = ~5 D(meas.) = 3.339–3.368 D(calc.) = [3.48]

Optical Properties: Transparent to translucent. *Color:* Red-brown. *Luster:* Waxy; pearly on the basal cleavage.
Optical Class: Uniaxial (–). ω = 1.681–1.704 ϵ = 1.643–1.679

Cell Data: *Space Group:* n.d. a = 13.36–13.43 c = 14.24–14.31 Z = 2

X-ray Powder Pattern: Franklin, New Jersey, USA.
1.688 (100), 2.673 (60), 1.511 (60), 2.466 (50), 2.022 (50), 3.55 (40), 1.975 (40)

Chemistry:	(1)	(2)	(3)		(1)	(2)	(3)
SiO_2	32.0	31.51	31.27	MnO	42.5	48.90	49.22
TiO_2		0.03		ZnO	1.6		
Al_2O_3		0.01		MgO	2.3	0.06	
Fe_2O_3	2.6			CaO		0.02	
As_2O_3	12.81	11.41	12.87	Cl	0.0	0.11	
FeO		0.14		H_2O	6.82	[6.73]	6.64
				Total	100.6	[98.92]	100.00

(1) Franklin, New Jersey, USA; by electron microprobe, As_2O_3 by wet chemical analysis, H_2O by the Penfield method. (2) Ködnitz Valley, Austria; by electron microprobe, average of 13 analyses; H_2O calculated from stoichiometry; original total given as 99.83%. (3) $Mn_{16}As_3Si_{12}O_{36}(OH)_{17}$.

Polymorphism & Series: Dimorphous with nelenite.

Occurrence: In banded willemite-franklinite ore or rhodonite, from a metamorphosed stratiform zinc deposit (Franklin, New Jersey, USA); in manganese-rich lenses in quartzitic chlorite schists probably of marine origin (Ködnitz Valley, Austria).

Association: Willemite, franklinite, calcite, rhodonite (Franklin, New Jersey, USA); tephroite, pyroxmangite, rhodonite, spessartine, rhodochrosite (Ködnitz Valley, Austria).

Distribution: From Franklin, Sussex Co., New Jersey, USA. In the Ködnitz Valley, Tirol, Austria.

Name: For Dr. Waldemar Theodore Schaller (1882–1967), mineralogist, U.S. Geological Survey.

Type Material: Harvard University, Cambridge, Massachusetts, 87106; National Museum of Natural History, Washington, D.C., USA, R6610.

References: (1) Gage, R.B., E.S. Larsen, and H.E. Vasser (1925) Schallerite, a new arseno-silicate mineral from Franklin Furnace, New Jersey. Amer. Mineral., 10, 9–11. (2) Bauer, L.H. and H. Berman (1928) Friedelite, schallerite, and related minerals. Amer. Mineral., 13, 341–348. (3) McConnell, D. (1954) Crystal chemistry of schallerite. Amer. Mineral., 39, 929–936. (4) Dunn, P.J., D.R. Peacor, J.A. Nelen, and J.A. Norberg (1981) Crystal-chemical data for schallerite, caryopilite and friedelite from Franklin and Sterling Hill, New Jersey. Amer. Mineral., 66, 1054–1062. (5) Albrecht, J. (1990) An As-rich manganiferous mineral assemblage from the Ködnitz Valley (Eastern Alps, Austria): geology, mineralogy, genetic considerations, and implications for metamorphic Mn deposits. Neues Jahrb. Mineral., Monatsh., 363–375.