Ovamboite $Cu_{20}(Fe,Cu,Zn)_6W_2Ge_6S_{32}$

Crystal Data: Isometric. *Point Group*: $\bar{4}$ 3*m*. As round segregations, to 100 μm, as disseminated emulsion-texture grains in germanite, and as the outer zones of maikainite overgrowths on germanocolusite.

Physical Properties: *Cleavage*: None. *Fracture*: n.d. *Tenacity*: n.d. Hardness = n.d. VHN = 265-340 (30 g load). D(meas.) = n.d. D(calc.) = 4.736

Optical Properties: Opaque. *Color*: White to pale yellow; pinkish gray in reflected light. *Streak*: n.d. *Luster*: Metallic.
Optical Class: Isotropic.
R: (460) 24.1, (546) 24.3, (589) 24.4, (650) 24.0

Cell Data: *Space Group*: $P\bar{4}$ 3*n*. By analogy with the germanite group. a = 10.68 Z = 1

X-ray Powder Pattern: Tsumeb deposit, Namibia.
3.08 (100), 1.887 (70), 1.612 (50), 2.67 (20), 1.225 (15), 1.543 (10), 1.333 (10)

Chemistry:

	(1)
Cu	39.85
Fe	4.75
Zn	3.34
Mo	1.01
W	9.83
Sn	0.04
V	0.09
Ge	10.01
Ga	0.48
As	2.58
S	29.65
Total	101.63

(1) Tsumeb deposit, Namibia; electron microprobe analysis; corresponding to $(Cu_{21.41}Fe_{2.91}Zn_{1.74})_{\Sigma=26.06}(W_{1.83}Mo_{0.36}V_{0.06}Sn_{0.01})_{\Sigma=2.26}(Ge_{4.70}As_{1.17}Ga_{0.24})_{\Sigma=6.11}S_{31.57}$.

Mineral Group: Germanite group.

Occurrence: In a germanium-bearing, base-metal, massive-sulfide deposit (Tsumeb); in a gold-bearing, base-metal, massive-sulfide deposit (Maikain).

Association: Maikainite, germanite, germanocolusite (Tsumeb).

Distribution: From the Tsumeb deposit, Ovamboland, Namibia and the Maikain deposit, Kazakhstan.

Name: For the *Ovambo*land region of Namibia in which the first specimens were located.

Type Material: A.E. Fersman Mineralogical Museum, Russian Academy of Sciences, Moscow, and in the Mining Museum, St. Petersburg, Russia.

References: (1) Spiridonov, E.M. (2003) Maikainite $Cu_{20}(Fe,Cu)_6Mo_2Ge_6S_{32}$ and ovamboite $Cu_{20}(Fe,Cu,Zn)_6W_2Ge_6S_{32}$: New minerals in massive sulfide base metal ores. Doklady Earth Sci., 393A, 1329-1332. (2) (2004) Amer. Mineral., 89, 1830 (abs. ref. 1).