Tsumgallite GaO(OH)

Crystal Data: Orthorhombic. *Point Group*: 2/*m* 2/*m* 2/*m*. As irregular aggregates (<1 mm) of mica-like platelets to 40 μm, tabular on {010}.

Physical Properties: *Cleavage:* Perfect {010}. *Fracture*: n.d. *Tenacity*: n.d. Hardness = Soft. D(meas.) = n.d. D(calc.) = 5.08 Nonfluorescent.

Optical Properties: Translucent. *Color*: Pale greenish yellow to beige. *Streak*: White.
Luster: Pearly.
Optical Class: Biaxial. *n*(calc.) = 1.96-1.97

Cell Data: *Space Group*: *Pbnm*. *a* = 4.512(5) *b* = 9.772(8) *c* = 2.967 Z = 4

X-ray Powder Pattern: Tsumeb, Namibia.
4.089 (100), 2.404 (100), 2.632 (33), 1.690 (26), 2.530 (22), 1.538 (21), 1.478 (16)

Chemistry:

	(1)	(2)
Ga_2O_3	78.13	91.23
Fe_2O_3	3.99	
GeO_2	4.01	
ZnO	0.78	
SiO_2	1.07	
H_2O	[8.77]	8.77
Total	96.75	100.00

(1) Tsumeb, Namibia; average of 15 electron microprobe analyses, H_2O calculated; corresponds to $(Ga_{0.86}Fe_{0.05}Ge_{0.04}Si_{0.02}Zn_{0.01})_{\Sigma=0.98}O(OH)_{1.00}$. (2) GaO(OH).

Mineral Group: Diaspore group.

Occurrence: In vugs within tennantite-germanite ore from the oxidation zone.

Association: Söhngeite, zincian siderite, chalcocite, tennantite, germanite, quartz.

Distribution: From second oxidation zone of the Tsumeb deposit, Namibia.

Name: Refers to the locality, *Tsum*eb, and *gall*ium in the essential chemical composition.

Type Material: Mineralogical Museum, University of Hamburg, Germany.

References: (1) Schlüter, J., K.-H. Klaska, G. Adiwidjaja, and G. Gebbard (2003) Tsumgallite, GaO(OH), a new mineral from the Tsumeb mine, Tsumeb, Namibia. Neues Jahrb. Mineral. Mon., 521-527. (2) (2004) Amer. Mineral., 89, 896 (abs. ref. 1).