Walfordite $(Fe^{3+}, Te^{6+})Te_3^{4+}O_8$

Crystal Data: Cubic. *Point Group:* $2/m\ \overline{3}$. Crystals are cubic {100}, may be modified by minor {111}, to 0.2 mm.

Physical Properties: *Tenacity:* Brittle. Hardness = n.d. D(meas.) = n.d. D(calc.) = 5.841

Optical Properties: Transparent to opaque. *Color:* Orange. *Streak:* Yellow-orange. *Luster:* Adamantine.
Optical Class: Isotropic. $n = [2.23]$ (by the rule of Gladstone and Dale).

Cell Data: *Space Group:* $Ia3$. a = 11.011(5) Z = 8

X-ray Powder Pattern: Tambo mine, Chile.
3.175 (100), 1.658 (45), 1.944 (44), 2.749 (37), 4.486 (29), 2.943 (23), 2.592 (22)

Chemistry:

	(1)
TeO_3	8.67
TeO_2	81.74
TiO_2	1.11
Fe_2O_3	8.30
MgO	0.38
Total	100.20

(1) Tambo mine, Chile; by electron microprobe, total Fe as Fe_2O_3; Te calculated for $Te^{4+}O_3$, the balance as Te^{6+}; then corresponds to $(Fe^{3+}_{0.61}Te^{6+}_{0.29}Ti_{0.08}Mg_{0.06})_{\Sigma=1.04}Te^{4+}_{3.00}O_8$.

Occurrence: Very rare in the brecciated oxidized zone of a tellurium-bearing hydrothermal gold deposit.

Association: Alunite, rodalquilarite, gold, emmonsite, jarosite, pyrite.

Distribution: From the Wendy open pit, El Indio-Tambo district, east of La Serena, Coquimbo, Chile.

Name: Honors Phillip Walford (1945—), Chief Geologist, LAC Minerals Ltd., who noted the first specimens.

Type Material: Royal Ontario Museum, Toronto, Canada, M47817, M47818.

References: (1) Back, M.E., J.D. Grice, R.A. Gault, A.J. Criddle, and J.A. Mandarino (1999) Walfordite, a new tellurite species from the Wendy open pit, El Indio – Tambo mining property, Chile. Can. Mineral., 37, 1261–1268. (2) (2000) Amer. Mineral., 85, 1324 (abs. ref. 1).