Fairbankite $PbTe^{4+}O_3$

Crystal Data: Triclinic. *Point Group:* $\overline{1}$ or 1. Crystals nearly equant, to 0.5 mm; typically as thin crusts.

Physical Properties: *Tenacity:* Brittle. Hardness = 2 D(meas.) = n.d. D(calc.) = 7.45

Optical Properties: Transparent. *Color:* Colorless. *Luster:* Resinous to adamantine. *Optical Class:* Biaxial (–) or (+). *Dispersion:* Weak. $\alpha = 2.29$ $\beta = 2.31$ $\gamma = 2.33$ 2V(meas.) = 86° 2V(calc.) = 90°

Cell Data: *Space Group:* $P\overline{1}$ or $P1$. $a = 7.81$ $b = 7.11$ $c = 6.96$ $\alpha = 117°12'$ $\beta = 93°47'$ $\gamma = 93°24'$ Z = 4

X-ray Powder Pattern: Grand Central mine, Arizona, USA.
3.265 (10), 3.148 (6), 3.098 (6), 2.828 (6), 3.020 (5), 2.516 (5), 2.076 (3)

Chemistry:

	(1)	(2)
TeO_2	41.70	41.69
PbO	58.30	58.31
Total	[100.00]	100.00

(1) Grand Central mine, Arizona, USA; recalculated to 100% from an original total of 100.3%, after deduction of $PbCO_3$ 13.0% due to cerussite impurity. (2) $PbTeO_3$.

Polymorphism & Series: Dimorphous with plumbotellurite.

Occurrence: Very rare on the mine dump from a hydrothermal Au–Te-bearing ore deposit.

Association: Oboyerite, cerussite, "opal".

Distribution: From the Grand Central mine, Tombstone, Cochise Co., Arizona, USA.

Name: Honors Nathaniel Kellogg Fairbank (1829–1903), who organized the company that developed the Grand Central lode, Tombstone, Arizona, USA.

Type Material: Natural History Museum, Paris; The Natural History Museum, London, England, 1980,540; National Museum of Natural History, Washington, D.C., USA, 160238.

References: (1) Williams, S.A. (1979) Girdite, oboyerite, fairbankite, and winstanleyite, four new tellurium minerals from Tombstone, Arizona. Mineral. Mag., 43, 453–457. (2) (1980) Amer. Mineral., 65, 809 (abs. ref. 1).