Holfertite $U^{6+}_{1.75}Ti^{4+}Ca_{0.25}O_{7.5}(H_2O)_3$ or $U^{6+}_{1.75}Ti^{4+}Ca_{0.25}O_{7.17}(OH)_{0.67}(H_2O)_3$

Crystal Data: Hexagonal. *Point Group*: 3. As hollow prismatic crystals, to 5 mm, in isolation or as sprays.

Physical Properties: *Cleavage*: Perfect on {110}. *Fracture*: Uneven to conchoidal. *Tenacity*: Brittle. Hardness = 4 D(meas.) = > 4.22 D(calc.) = 4.22-4.26

Optical Properties: Transparent to translucent. *Color*: Canary-yellow to orange-yellow, colorless in transmitted light. *Streak*: Pale yellow. *Luster*: Adamantine. *Optical Class*: Uniaxial (+). ω = 1.815(8) ε = 1.910(8)

Cell Data: *Space Group*: *P*3. a = 10.824(2) c = 7.549(2) Z = 3

X-ray Powder Pattern: Starvation Canyon, Thomas Range, Utah, USA.
4.60 (10), 2.90 (8), 1.87 (3), 1.747 (3), 1.211 (3), 3.05 (2), 1.531 (2)

Chemistry:

	(1)	(2)
CaO	3.01	2.29
UO_3	75.97	76.03
TiO_2	13.02	11.89
Fe_2O_3	0.47	0.44
K_2O	0.31	0.30
H_2O	8.59	8.27
Total	101.34	99.22

(1) Starvation Canyon, Thomas Range, Utah, USA; average of 10 electron microprobe analyses supplemented by spectroscopy, H_2O by LOI; corresponds to $U^{6+}_{1.68}Ti^{4+}_{1.03}Ca_{0.34}Fe^{3+}_{0.04}K_{0.04}O_{7.5}(H_2O)_3$ or $U^{6+}_{1.68}Ti^{4+}_{1.03}Ca_{0.34}Fe^{3+}_{0.04}K_{0.04}O_{7.17}(OH)_{0.67}(H_2O)_3$.
(2) Starvation Canyon, Thomas Range, Utah, USA; average of 14 electron microprobe analyses supplemented by spectroscopy, H_2O by LOI; corresponds to $U^{6+}_{1.74}Ti^{4+}_{0.97}Ca_{0.27}Fe^{3+}_{0.04}K_{0.04}O_{7.5}(H_2O)_3$ or $U^{6+}_{1.74}Ti^{4+}_{0.97}Ca_{0.27}Fe^{3+}_{0.04}K_{0.04}O_{7.17}(OH)_{0.67}(H_2O)3$.

Occurrence: A pneumatolytic phase in rhyolite.

Association: Hematite, bixbyite, fluorite, topaz, beryl, calcite.

Distribution: From Starvation (formerly Searle) Canyon, Thomas Range, Utah, USA.

Name: Honors John W. Holfert (b. 1949) for his contributions to understanding the mineral occurrences in the Thomas Range, Utah, USA.

Type Material: A.E. Fersman Mineralogical Museum, Russian Academy of Sciences, Moscow, Russia (#91374).

References: (1) Belakovskiy, D.I., L.A. Pautov, E. Sokolova, F.C. Hawthorne, and A.V. Mokhov (2006) Holfertite, a new hydroxyl-hydrated uranium titanate from Starvation Canyon, Thomas Range, Utah. Mineral. Record, 37(4), 311-317. (2) Sokolova, E., F.C. Hawthorne, D.I. Belakovskiy, and L.A. Pautov (2005) The OD (order-disorder) structure of holfertite, a hydrated uranyl titanate mineral from Searle Canyon, Thomas Range, Utah, U.S.A. Can. Mineral., 73, 1545-1552. (3) (2006) Amer. Mineral., 91, 1951-1952 (abs. ref. 1). (4) (2006) Amer. Mineral., 91, 1204 (abs. ref. 2).