Wildcatite $CaFe^{3+}Te^{6+}O_5(OH)$

Crystal Data: Hexagonal. *Point Group*: $\bar{3}\,2/m$. As earthy coatings, as compact aggregates in glassy coatings, or as aggregates of nanoscale crystallites that resemble crystals to 0.1 mm.

Physical Properties: *Cleavage*: n.d. *Tenacity*: Brittle. *Fracture*: Conchoidal (glassy masses). Hardness = ~3 D(meas.) = n.d. D(calc.) = 4.557

Optical Properties: Transparent to translucent. *Color*: Orange to brown (coatings), white, red-brown (crystallite masses). *Streak*: Dull orange to white. *Luster*: Vitreous to earthy. *Optical Class*: Cryptocrystalline aggregates appear isotropic.

Cell Data: *Space Group: P* $\bar{3}\,1m$. a = 5.200(1) c = 4.967(1) Z = 1

X-Ray Diffraction Pattern: Wildcat prospect, Detroit Mining district, Juab Co., Utah, USA. 3.332 (100), 1.795 (88), 2.301 (59), 2.597 (55), 2.050 (33), 4.977 (31),1.610 (30)

Chemistry:

	(1)	(2)
MgO	0.52	
CaO	15.37	17.50
MnO	0.33	
CuO	0.08	
ZnO	0.12	
PbO	0.47	
Fe_2O_3	16.39	24.91
Bi_2O_3	1.69	
SiO_2	0.07	
Sb_2O_5	0.99	
TeO_3	56.37	54.78
H_2O	[1.43]	2.81
Total	93.83	100.00

(1) Wildcat prospect, Detroit Mining district, Juab Co., Utah, USA; average electron microprobe analysis supplemented by Raman spectroscopy, H_2O calculated; corresponds to $(Ca_{0.98}Bi^{3+}_{0.02}Pb_{0.01})_{\Sigma=1.01}(Fe^{3+}_{0.73}Mg_{0.05}Mn^{2+}_{0.02}Zn_{0.01})_{\Sigma=0.81}(Te^{6+}_{1.15}Sb^{5+}_{0.02}Si_{0.01})_{\Sigma=1.18}O_{5.44}(OH)_{0.56}$.
(2) $CaFe^{3+}Te^{6+}O_5(OH)$.

Occurrence: From the oxidation of primary Te phases. Occurs on late fractures, as vug fillings and filling open-space in breccia matrix.

Association: Gold, calcite, aragonite, native tellurium, manganese oxides, iron oxides, clinobisvanite, beyerite, coronadite, paratellurite, tellurite, andymcdonaldite, burckhardtite, carlfriesite, eckhardite, frankhawthorneite, khinite, mcalpineite, tlapallite, xocolatlite.

Distribution: From the Wildcat prospect ("high grade hill"), Detroit Mining district, Juab Co., Utah, USA.

Name: For the type locality, the *Wildcat* prospect, named for the area it lies within, Wildcat Hill.

Type Material: Natural History Museum of Los Angeles County, Los Angeles, California, USA (74538, 74539 and 74540), the Museums Victoria, Melbourne, Australia (M55257 and M55258), the Natural History Museum, London, England (BM 2020,4), and the W.M. Keck Earth Science and Mineral Engineering Museum, University of Nevada, Reno, Nevada, USA (2020.002.001).

References: (1) Missen, O.P., S.J. Mills, A.R. Kampf, M.F. Coolbaugh, J. Najorka, M.S. Rumsey, J. Marty, J. Spratt, M. Raudsepp, and J.K. McCormack (2021) Wildcatite, $CaFe^{3+}Te^{6+}O_5(OH)$, the second new tellurate mineral from the Detroit district, Juab County, Utah. Can. Mineral., 59, 729-739.