Whitecapsite $H_{16}Mn^{2+}_{0.08}Fe^{2+}_{4.95}Fe^{3+}_{14.07}Sb^{3+}_{6.10}As^{5+}_{17.89}O_{88}\cdot 120H_2O$

Crystal Data: Hexagonal. *Point Group*: 6/*m*. Forms hexagonal prismatic {110} crystals, to 1.5 mm, doubly terminated by {111}.

Physical Properties: *Cleavage*: None. *Fracture*: Uneven. *Tenacity*: Brittle. Hardness = 2-2.5 D(meas.) = 2.30(3) D(calc.) = 2.297

Optical Properties: Transparent. *Color*: Bright orange to golden-brownish orange. *Streak*: Yellow. *Luster*: Strongly vitreous. *Pleochroism:* Very weak, yellowish. *Absorption: E >O.* *Optical Class*: Uniaxial (+). ω = 1.590(2) ε = 1.603(3)

Cell Data: *Space Group*: $P6_3/m$. a = 16.0916(8) c = 21.7127(9) Z = 1

X-ray Powder Pattern: White Caps mine, Nevada, USA.
11.73 (100), 13.99 (49), 2.999 (8), 5.267 (6), 2.648 (5), 3.644 (4), 2.757 (4)

Chemistry:

	(1)
MnO	0.09
Fe_2O_3	[22.73]
Sb_2O_3	13.30
As_2O_5	30.78
H_2O	[34.53]
Total	100.84

(1) White Caps mine, Nevada, USA; average of 5 electron microprobe analyses, presence of H_2O, ($H^+\cdot nH_2O$) and an absence of OH^- confirmed by IR and Raman spectroscopy, XANES spectroscopy revealed the valences of Sb and Fe; H_2O, FeO and Fe_2O_3 calculated from structural analysis; corresponding to $H_{16}Mn^{2+}_{0.08}Fe^{2+}_{4.95}Fe^{3+}_{14.07}Sb^{3+}_{6.10}As^{5+}_{17.89}O_{88}\cdot 120H_2O$.

Occurrence: A secondary mineral in the oxidation zone of a hydrothermal sulfide deposit containing arsenopyrite, pyrite and stibnite.

Association: Picropharmacolite, guerinite, sulfur, gypsum; or metastibnite, jarosite, goethite, pitticite, gypsum, picropharmacolite.

Distribution: At the 310 foot level of the East orebody, White Caps mine, Manhattan district, Nye Co., Nevada, USA.

Name: For the locality that produced the first specimens.

Type Material: A.E. Fersman Mineralogical Museum, Russian Academy of Sciences, Moscow, Russia (# 93773).

References: (1) Pekov, I.V., N.V. Zubkova, J. Göttlicher, V.O. Yapaskurt, N.V. Chukanov, I.S. Lykova, D.I. Belakovskiy, M.C. Jensen, J.F. Leising, A.J. Nikischer, and D.Yu. Pushcharovsky (2014) Whitecapsite, a new hydrous iron and trivalent antimony arsenate mineral from the White Caps mine, Nevada, USA. European Journal of Mineralogy, 26(3), 557-587. (2) (2014) Amer. Mineral., 99, 1812-1813 (abs. ref. 1).