Ottensite $Na_3(Sb_2O_3)_3(SbS_3)\cdot 3H_2O$

Crystal Data: Hexagonal. *Point Group*: 6. As botryoidal to stalactitic crusts ~1mm thick of spherical aggregates to 0.3 mm of prismatic crystals on stibnite crystals.

Physical Properties: *Cleavage*: None. *Tenacity*: Brittle. *Fracture*: Irregular. Hardness = 3.5 D(meas.) = n.d. D(calc.) = 4.14 Non-fluorescent.

Optical Properties: Translucent. *Color*: Red-brown. *Streak*: Yellow-brown. *Luster*: Adamantine to vitreous.
Optical Class: Uniaxial (+). *n*(calc.) = 1.992 *Pleochroism*: Weak, orange-red to red.

Cell Data: *Space Group*: $P6_3$. a = 14.1758(2) c = 5.5712(1) Z = 2

X-Ray Diffraction Pattern: Qinglong mining district, southwestern Guizhou Province, China. 2.906 (100), 2.991 (77), 12.29 (60), 3.506 (57), 4.125 (52), 4.643 (51), 2.679 (51)

Chemistry:

	(1)	(2)
Na_2O	7.44	7.25
K_2O	0.10	
Sb_2O_3	84.64	83.50
S	7.43	7.66
H_2O	4.60	
-O = S	3.71	.
Total	100.50	98.65

(1) Qinglong mining district, southwestern Guizhou Province, China; average electron microprobe analysis, H_2O by TGA; corresponds to $(Na_{2.89}K_{0.03})_{\Sigma=2.92}(Sb_2O_3)_{\Sigma=3.03}(Sb_{0.93}S_{2.79})(OH)_{0.13}\cdot 3.01H_2O$.
(2) Pereta mine, Grosseto Provence, Tuscany, Italy; average electron microprobe analysis supplemented by Raman spectroscopy.

Polymorphism & Series: Possible at least partial isomorphous series between cetineite and ottensite.

Occurrence: A supergene product of stibnite weathering in the oxidation zone.

Association: Stibnite, fluorite (Qinglong); mopungite, brizziite, metastibnite, valentinite (Pereta).

Distribution: From the Qinglong mining district, Qinglong County, southwestern Guizhou Province, China and at the Pereta mine, Grosseto Provence, Tuscany, Italy.

Name: Honors Berthold *Ottens* (b.1942) mineral collector and dealer from Spiegelau, Germany and expert on Chinese minerals.

Type Material: National Museum, Prague, Czech Republic (P1p 1/2006).

References: (1) Sejkora, J. and J. Hyrsl (2007) Ottensite a new mineral from QingLong, Guizhou Province, China. Mineral. Record, 38, 77-8. (2) Origlieri, M.J., T.A. Laetsch, and R.T. Downs (2007) A note on the paragenesis of ottensite. Mineral. Record, 38, 83-84. (3) Bittarello, E., F. Cámara, M.E. Ciriotti, and A. Marengo (2015) Ottensite, brizziite and mopungite from Pereta mine (Tuscany, Italy): new occurrences and crystal structure refinement of mopungite. Mineral. Petrol., 109, 431-442.