Aubertite $CuAl(SO_4)_2Cl \cdot 14H_2O$

Crystal Data: Triclinic. *Point Group:* $\overline{1}$. As crusts of corroded grains.

Physical Properties: *Cleavage:* {010}, perfect. Hardness = n.d. D(meas.) = 1.815 D(calc.) = 1.85 Soluble in H_2O.

Optical Properties: Translucent. *Color:* Azure-blue.
Optical Class: Biaxial (–). *Orientation:* Optic axis nearly $\perp$ {010}. *Dispersion:* $r > v$, moderate. $\alpha = 1.462$ $\beta = 1.482$ $\gamma = 1.495$ 2V(meas.) = 71°

Cell Data: *Space Group:* $P\overline{1}$. $a = 6.282(3)$ $b = 13.192(5)$ $c = 6.260(3)$ $\alpha = 91.85(3)°$ $\beta = 94.70(3)°$ $\gamma = 82.46(3)°$ Z = 1

X-ray Powder Pattern: Quetena, Chile.
4.50 (100), 4.247 (69), 3.952 (58), 6.25 (45), 5.59 (44), 3.690 (42), 3.130 (42)

Chemistry:

	(1)	(2)
SO_3	28.30	28.07
Al_2O_3	9.16	8.94
CuO	11.80	13.95
CaO	0.18	
Na_2O	0.13	
K_2O	0.05	
Cl	6.70	6.22
H_2O	45.40	44.22
$-O = Cl_2$	1.51	1.40
Total	100.21	100.00

(1) Quetena, Chile; by spectrophotometric methods, H_2O by the Penfield method; corresponds to $Cu_{0.82}Al_{1.00}(SO_4)_{1.97}Cl_{1.05} \cdot 14.04H_2O$. (2) $CuAl(SO_4)_2Cl \cdot 14H_2O$.

Occurrence: In the oxidized zone of a copper deposit.

Association: Copiapite, botryogen, amarantite, parabutlerite, metahohmannite.

Distribution: From Quetena, west of Calama, Antofagasta, Chile.

Name: Honors J. Aubert (1929–), French geophysicist who collected the first specimens.

Type Material: University of Pierre and Marie Curie, Paris; National School of Mines, Paris, France.

References: (1) Cesbron, F., D. Ginderow, M.-C. Sichère, and H. Vachey (1979) L'aubertite, un nouveau chloro-sulfate hydraté de cuivre et d'aluminium. Bull. Minéral., 102, 348–350 (in French with English abs.). (2) (1980) Amer. Mineral., 65, 205–206 (abs. ref. 1). (3) Ginderow, D. and F. Cesbron (1979) Structure cristalline de l'aubertite, $AlCuCl(SO_4)_2 \cdot 14H_2O$. Acta Cryst., 35, 2499–2502 (in French with English abs.).