Adrianite $Ca_{12}(Al_4Mg_3Si_7)O_{32}Cl_6$

Crystal Data: Cubic. *Point Group*: $\bar{4}\,3m$. As irregular masses to 6 μm.

Physical Properties: *Cleavage*: n.d. *Fracture*: n.d. *Tenacity*: n.d. Hardness = n.d.
D(meas.) = n.d. D(calc.) = 3.03

Optical Properties: Transparent. *Color*: n.d. *Streak*: n.d. *Luster*: n.d.
Optical Class: n.d.

Cell Data: Space Group: $I\bar{4}\,3d$. a = 11.981 Z = 2

X-ray Powder Pattern: Calculated pattern.
2.679 (100), 2.446 (36), 2.995 (32), 1.661 (28), 1.601 (28), 4.891 (14), 2.187 (14)

Chemistry:

	(1)	(2)
CaO	41.5	42.59
SiO_2	27.5	34.23
Al_2O_3	12.4	
MgO	7.3	12.76
Na_2O	0.41	
Cl	13.0	13.46
$-O = Cl_2$	2.94	3.04
Total	99.17	100.00

(1) Allende CV3 carbonaceous chondrite meteorite; average of 3 electron microprobe analyses; corresponds to $(Ca_{11.69}Na_{0.21})_{\Sigma=11.90}(Al_{3.85}Mg_{2.88}Si_{7.23})O_{32}Cl_{5.80}$. (2) $Ca_{12}(Al_4Mg_3Si_7)O_{32}Cl_6$.

Mineral Group: Mayenite supergroup, wadalite group.

Occurrence: In altered areas along veins between primary melilite, spinel, and Ti-Al-diopside in a Type B1 FUN (Fractionation and Unidentified Nuclear effects) Ca-Al-rich inclusion (CAI), *Egg*-3. Adrianite apparently formed by iron-alkali-halogen metasomatic alteration of primary CAI minerals such as melilite, anorthite, perovskite, and Ti-Al-diopside on the CV chondrite parent asteroid.

Association: Monticellite, grossular, wadalite, hutcheonite.

Distribution: From the Allende CV3 carbonaceous chondrite, which fell at Pueblito de Allende, Chihuahua, Mexico, on February 8, 1969.

Name: Honors Adrian J. Brearley (b. 1958), mineralogist and cosmochemist at the University of New Mexico, in recognition of his many contributions to meteorite mineralogy, specifically the alteration mineralogy of chondritic meteorites.

Type Material: G.J. Wasserburg Meteorite Collection, Division of Geological and Planetary Sciences, California Institute of Technology, Pasadena, California, USA (MQM803).

References: (1) Ma, C. and A.N. Krot (2018) Adrianite, $Ca_{12}(Al_4Mg_3Si_7)O_{32}Cl_6$, a new Cl-rich silicate mineral from the Allende meteorite: An alteration phase in a Ca-Al-rich inclusion. Amer. Mineral., 103(8), 1329-1334.