

**Crystal Data:** Triclinic. *Point Group:*  $\bar{1}$ . As aggregates of grains to 48  $\mu\text{m}$ .

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

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

**Cell Data:** Space Group:  $P\bar{1}$ .  $a = 10.367$   $b = 10.756$   $c = 8.895$   $\alpha = 106.0^\circ$   $\beta = 96.0^\circ$   $\gamma = 124.7^\circ$   
 $Z = 2$

**X-ray Powder Pattern:** Calculated pattern.

2.544 (100), 2.089 (89), 2.104 (84), 2.103 (84), 2.541 (81), 2.540 (75), 2.683 (68)

<b>Chemistry:</b>	(1)
Na <sub>2</sub> O	0.04
CaO	13.58
MgO	1.22
FeO	0.35
MnO	0.05
Al <sub>2</sub> O <sub>3</sub>	44.14
Sc <sub>2</sub> O <sub>3</sub>	0.7
V <sub>2</sub> O <sub>3</sub>	31.6
SiO <sub>2</sub>	2.02
TiO <sub>2</sub>	5.54
Total	99.24

(1) Allende CV3 meteorite; average of 5 electron microprobe analyses; corresponds to (Ca<sub>1.99</sub>Na<sub>0.01</sub>) $\Sigma=1.00$ (V<sup>3+</sup><sub>3.47</sub>Al<sub>1.40</sub>Ti<sup>4+</sup><sub>0.57</sub>Mg<sub>0.25</sub>Sc<sub>0.08</sub>Fe<sup>2+</sup><sub>0.04</sub>Mn<sub>0.01</sub>) $\Sigma=5.82$ (Al<sub>5.72</sub>Si<sub>0.28</sub>) $\Sigma=6.00$ O<sub>20</sub>.

**Mineral Group:** Aenigmatite group of the sapphirine supergroup.

**Occurrence:** Probably formed in the parent body of a carbonaceous chondrite meteorite by late-stage metasomatic reactions in which grossular, corundum, coulsonite, and hercynite, replace primary phases such as melilite, hibonite, spinel, perovskite, and burnettite.

**Association:** Corundum, grossular, anorthite, coulsonite, hercynite.

**Distribution:** In a V-rich, fluffy Type A Ca-Al-rich inclusion (CAI) A-WP1 in Allende carbonaceous chondrite CV3, Pueblito de Allende, Chihuahua, Mexico.

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**Type Material:** National Museum of Natural History, Smithsonian Institution, Washington, DC, USA (USNM 7617).

**References:** (1) Ma, C., J. Paque, and O. Tschauer (2016) Discovery of beckettite, Ca<sub>2</sub>V<sub>6</sub>Al<sub>6</sub>O<sub>20</sub>, a new alteration mineral in a V-rich Ca-Al-rich inclusion from Allende. 47th Lunar and Planetary Science Conference, session T335, 1704. (2) (2020) Amer. Mineral., 105(10), 1599 (abs. ref. 1).