

Crystal Data: Hexagonal. *Point Group:* $\bar{3}$. As anhedral grains, to 25 μm .

Physical Properties: *Cleavage:* n.d. *Fracture:* n.d. *Tenacity:* n.d. *Hardness* = n.d.
D(meas.) = n.d. D(calc.) = 4.84

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

Cell Data: *Space Group:* $R\bar{3}$. $a = 9.396$ $c = 8.720$ $Z = 3$

X-ray Powder Pattern: JCD 71-1022.

2.900 (100), 1.776 (32), 1.779 (27), 1.515 (19), 2.513 (18), 4.698 (5), 1.450 (4)

Chemistry:	(1)
Al ₂ O ₃	0.70
CaO	2.74
Sc ₂ O ₃	32.36
TiO ₂	5.47
V ₂ O ₃	0.35
Cr ₂ O ₃	0.02
FeO	0.82
Y ₂ O ₃	0.70
ZrO ₂	56.58
<u>HfO₂</u>	<u>1.21</u>
Total	100.94

(1) Allende meteorite; average of 8 electron microprobe analyses supplemented by Raman spectroscopy; corresponds to (Sc_{3.01}Ti⁴⁺_{0.44}Ca_{0.31}Al_{0.09}Fe²⁺_{0.07}Y_{0.04}V³⁺_{0.03}) $\Sigma=3.99$ (Zr_{2.95}Hf_{0.04}) $\Sigma=2.99$ O₁₂.

Occurrence: As grains in an ovoid-shaped, ultra-refractory inclusion in the Allende meteorite, likely a high-temperature condensate early in the formation of the solar system.

Association: Perovskite, Os-Ir-Mo-W alloys, Sc-stabilized tazheranite (cubic zirconia).

Distribution: In ultra-refractory inclusion *ACM-1*, Allende CV3 carbonaceous chondrite meteorite.

Name: For the meteorite that contained the first specimens.

Type Material: National Museum of Natural History, Washington, D.C., USA (USNM 7554).

References: (1) Ma, C., J.R. Beckett, and G.R. Rossman (2014) Allendeite (Sc₄Zr₃O₁₂) and hexamolybdenum (Mo,Ru,Fe), two new minerals from an ultrarefractory inclusion from the Allende meteorite. *Amer. Mineral.*, 99, 654-666.