

Crystal Data: Hexagonal. *Point Group:* 6/m 2/m 2/m. As acicular crystals to 20 μm.

Physical Properties: *Cleavage:* n.d. *Fracture:* n.d. *Tenacity:* n.d. *Hardness:* = n.d.
D(calc.) = 3.905 (synthetic CaAl₄Si₂O₁₁)

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

Cell Data: Space Group: *P*6₃/*mmc*. *a* = 5.42(1) *c* = 12.70(3) *Z* = 2

X-ray Powder Pattern: n.d.

Chemistry:	(1)
Al ₂ O ₃	52.7
SiO ₂	32.6
<u>CaO</u>	<u>15.0</u>
Total	100.0

(1) Oued Awlitis 001 lunar meteorite; average of 10 TEM-EDS analyses supplemented by micro-Raman spectroscopy; corresponds to Ca_{1.02}Al_{3.92}Si_{2.06}O₁₁.

Occurrence: In shock melt pockets of roughly anorthitic bulk composition in a feldspathic lunar meteorite. Formed from primordial feldspathic lunar crust during impact cratering events. Forms in Earth's mantle during deep recycling of aluminous crustal materials and is a key host for Al and Ca of subducted sediments in most of the transition zone and uppermost lower mantle (460-700 km).

Association: Ca-rich plagioclase, olivine, pyroxene, Fe-Ni metal, troilite, ilmenite, Ti-rich spinel, apatite, zircon, baddeleyite, "silica".

Distribution: From the feldspathic lunar meteorite Oued Awlitis 001.

Name: Honors Don E. Wilhelms (b. 1930) for his seminal and ground-breaking work on the geological history of the Moon.

Type Material: Meteorite collection, Natural History Museum, Vienna, Austria (NHMV-O104).

References: (1) Fritz, J., A. Greshake, M. Klementova, R. Wirth, L. Palatinus, R.G. Trønnnes, V.A. Fernandes, U. Böttger, and L. Ferrière (2020) Donwilhelmsite, [CaAl₄Si₂O₁₁], a new lunar high-pressure Ca-Al-silicate with relevance for subducted terrestrial sediments. *Amer. Mineral.*, 105(11), 1704-1711. (2) Gautron, L., R. Angel, and R. Miletich (1999) Structural characterization of the high-pressure phase CaAl₄Si₂O₁₁. *Phys. Chem. Min.* 27, 47-51.