Davidsmithite $(Ca,\square)_2Na_6Al_8Si_8O_{32}$

Crystal Data: Hexagonal. *Point Group*: 6. As anhedral grains, rarely skeletal or lath-like crystals to 100 μm in polycrystalline aggregates. *Twinning*: Probably polysynthetic on (100) indicated by X-ray structure analysis.

Physical Properties: *Cleavage*: None. *Tenacity*: n.d. *Fracture*: n.d. Hardness = < 5.5
D(meas.) = n.d. D(calc.) = 2.597

Optical Properties: Transparent. *Color*: White; colorless to pale yellowish in transmitted light.
Streak: White. *Luster*: Vitreous to greasy.
Optical Class: Uniaxial (-). ω = 1.538(2) ε = 1.535(2)

Cell Data: *Space Group*: $P6_3$. a = 9.982(1) c = 8.364(2) Z = 1

X-ray Powder Pattern: Calculated pattern.
3.006 (100), 3.840 (92.9), 3.267 (71), 4.182 (65.7), 2.343 (53.6), 2.882 (41.3), 2.305 (31.3)

Chemistry:

	(1)	(2)
CaO	3.16	4.96
K_2O	0.69	
Na_2O	16.89	16.45
Al_2O_3	35.52	36.07
Fe_2O_3	0.13	
SiO_2	43.63	42.52
MgO	0.02	
MnO	0.04	
NiO	0.01	
TiO_2	0.04	
Total	100.12	100.00

(1) Liset, Selje, Vestlandet, Norway; average of 10 electron microprobe analyses supplemented by Raman spectroscopy; corresponds to $([Ca_{0.636}\square_{0.636}]\square_{0.414}K_{0.165}Na_{0.149})_{\Sigma=2.000}Na_{6.000}(Al_{7.863}Fe^{3+}_{0.019})_{\Sigma=7.882}Si_{8.192}O_{32}$. (2) $(Ca\square)_2Na_6Al_8Si_8O_{32}$.

Occurrence: A rock-forming mineral in eclogite, now retrograde-altered to amphibolite facies.

Association: Lisetite, albitic plagioclase, taramite.

Distribution: From the Liset eclogite pod, Liset, Selje, Western Gneiss Region (WGR), Vestlandet, Norway.

Name: Honors the contributions to mineralogy and petrology by David Christopher Smith (b. 1946), Emeritus Professor, Natural History Museum, Paris, France.

Type Material: Mineral Collection, Natural History Museum, Paris, France (MNHN215-001).

References: (1) Kechid, S.-A., G.C. Parodi, S. Pont, and R. Oberti (2017) Davidsmithite, $(Ca,\square)_2Na_6Al_8Si_8O_{32}$: a new, Ca-bearing nepheline-group mineral from the Western Gneiss Region, Norway. Eur. J. Mineral., 29(6), 1005-1013. (2) Rossi, G., R. Oberti, and D.C. Smith (1989) The crystal structure of a K-poor Ca-rich silicate with the nepheline framework and crystal-chemical relationships in the compositional space $(K,Na,Ca,\square)_8(Al,Si)_{16}O_{32}$. Eur. J. Mineral., 1(1), 59-70. (3) (2018) Amer. Mineral., 103, 2039 (abs. refs. 1 & 2).