Carlsbergite CrN

Crystal Data: Cubic. *Point Group:* $4/m\ \overline{3}\ 2/m$. As oriented platelets, to 30 μm, and feathery to irregular grain-boundary precipitates.

Physical Properties: Hardness = High. VHN = Probably > 1000 D(meas.) = n.d. D(calc.) = [6.09]

Optical Properties: [Opaque.] *Color:* Light gray in reflected light, with a rose-violet tint. *Optical Class:* Isotropic.
R: (481) 49.5, (546) 41.5, (590) 41.0, (644) 40.5

Cell Data: *Space Group:* $Fm3m$. a = 4.16(3) Z = 4

X-ray Powder Pattern: Synthetic. (ICDD 11-65).
2.068 (100), 2.394 (80), 1.463 (80), 1.249 (60), 0.9260 (60), 0.8460 (60), 0.9496 (50)

Chemistry:

	(1)	(2)	(3)
Fe	0.1 – 1.8	1.9	
Mn		0.04	
Cr	76.0 – 78.0	76.3	78.78
Co		0.03	
Ni		0.3	
N	20.0 – 25.0	[21.4]	21.22
Total		[100.0]	100.00

(1) Agpalilik (Cape York) meteorite; by electron microprobe, ranges of several analyses. (2) Descubridora meteorite; by electron microprobe, N by difference, corresponding to $(Cr_{0.96}Fe_{0.02})_{\Sigma=0.98}N$. (3) CrN.

Occurrence: As minute platelets and grain boundary precipitates in kamacite and troilite, and as similar grains ringing daubreelite in iron meteorites.

Association: Kamacite, taenite, daubreelite, troilite, sphalerite.

Distribution: First noted in the Agpalilik (Cape York) iron meteorite; since identified in more than 70 meteorites, mostly of Ga–Ge group IIIA, and also in groups I and IIA.

Name: For the Carlsberg Foundation, Copenhagen, Denmark, which supported recovery and cutting of the Agpalilik meteorite.

Type Material: University of Copenhagen, Copenhagen, Denmark, 1967,410; American Museum of Natural History, New York, New York, USA.

References: (1) Buchwald, V.F. and E.R.D. Scott (1971) First nitride (CrN) in iron meteorites. Nature, Phys. Sci., 233, 113–114. (2) (1972) Amer. Mineral., 57, 1311 (abs. ref. 1). (3) Axon, H.J., J. Kinder, C.W. Haworth, and J.W. Horsfield (1981) Carlsbergite, CrN, in troilite, FeS, of the Sikhote Alin meteoritic iron. Mineral. Mag., 44, 107–109.