Murchisite Cr_5S_6

Crystal Data: Hexagonal. *Point Group*: $\bar{3}$ 2/*m*. As subhedral crystals to 4 mm.

Physical Properties: *Cleavage*: n.d. *Fracture*: n.d. *Tenacity*: n.d. Hardness = n.d.
D(meas.) = n.d. D(calc.) = 4.22

Optical Properties: Opaque. *Color*: Gray in reflected light. *Streak*: n.d. *Luster*: n.d.
Optical Class: n.d.

Cell Data: *Space Group*: $P\bar{3}$ 1*c*. a = 5.982 c = 11.509 Z = 2

X-ray Powder Pattern: Murchison CM2 meteorite.
2.074 (100), 2.654 (86), 1.727 (86), 2.991 (59), 1.105 (37), 4.724 (31), 1.327 (20)

Chemistry:

	(1)	(2)
Cr	53.32	57.47
S	42.87	42.53
V	1.44	
Fe	1.14	
P	0.10	
Ni	0.10	
Total	98.97	100.00

(1) Murchison CM2 meteorite; average electron microprobe analysis; corresponds to $(Cr_{4.60}V_{0.13}Fe_{0.09}Ni_{0.01})_{\Sigma=4.83}(S_{6.00}P_{0.01})_{\Sigma=6.01}$. (2) Cr_5S_6.

Occurrence: A low-temperature phase (~327 °C in the Cr-S system), probably formed from higher temperature $Cr_{1-x}S$ exsolved or expelled from a Cr-S-bearing, metal-rich spherule included in forsteritic olivine grains that were probably derived from chondrule fragments.

Association: Low-Ni iron ("kamacite"), martensitic iron, schreibersite, Ca-Al-rich glass, forsteritic olivine (crystal 1); tochilinite, serpentine, chromite, eskolaite (crystal 2).

Distribution: From the Murchison CM2 meteorite.

Name: For the *Murchis*on meteorite.

Type Material: National Museum of Natural History, Washington, D.C., USA (USNM 7507).

References: (1) Ma, C., J.R. Beckett, and G.R. Rossman (2011) Murchisite, Cr_5S_6, a new mineral from the Murchison meteorite. Amer. Mineral., 96, 1905-1908.