

**Crystal Data:** Isometric. *Point Group:*  $4/m\bar{3}2/m$ . As grains to 15  $\mu\text{m}$ .

**Physical Properties:** *Cleavage:* n.d. *Fracture:* n.d. *Tenacity:* n.d. *Hardness:* = n.d.  
D(meas.) = n.d. D(calc.) = 3.71

**Optical Properties:** n.d. *Color:* n.d. *Streak:* n.d. *Luster:* n.d.  
*Optical Class:* n.d. Stated to be similar in color and reflectivity to daubréelite, in reflected light.

**Cell Data:** Space Group: *Fd3m*.  $a = 10.11$   $Z = 8$

**X-ray Powder Pattern:** Calculated pattern.

3.048 (100), 1.787 (95), 2.528 (58), 1.946 (50), 0.799 (40), 3.574 (34), 1.032 (27)

<b>Chemistry:</b>	(1)	(2)
S	44.3	44.66
Cr	36.2	36.21
Mn	15.8	19.13
Fe	4.5	
Ni	0.09	
Cu	0.08	
Total	101.0	100.00

(1) Social Circle IVA iron meteorite; average of 4 electron microprobe analyses; corresponds to (Mn<sub>0.82</sub>Fe<sub>0.23</sub>)Cr<sub>1.99</sub>S<sub>3.95</sub>. (2) MnCr<sub>2</sub>S<sub>4</sub>.

**Mineral Group:** Linnaeite group.

**Occurrence:** In a CV3 carbonaceous chondrite and an iron meteorite.

**Association:** Daubréelite, chromite (Social Circle IVA iron meteorite); troilite, niningerite (Indarch EH4 enstatite chondrite).

**Distribution:** From the Social Circle IVA iron meteorite (thick section TK 724) and the Indarch EH4 enstatite chondrite.

**Name:** Honors Joseph (Joe) I. Goldstein (1939-2015), Distinguished Professor Emeritus of mechanical and industrial engineering and former dean, College of Engineering, University of Massachusetts, Amherst, USA, for his research on iron meteorites, metallographic cooling rates, Fe-Ni phase equilibria, electron microscopy, and microanalysis.

**Type Material:** University of California meteorite collection, Los Angeles, USA.

**References:** (1) Isa, J., C. Ma, and A.E. Rubin (2016) Joegoldsteinite: A new sulfide mineral (MnCr<sub>2</sub>S<sub>4</sub>) from the Social Circle IVA iron meteorite. *Amer. Mineral.*, 101, 1217-1221.