Comment on Os-S (Osmium-Sulfur)

H. Okamoto

The schematic Os-S phase diagram in [Massalski2] was redrawn from [Moffatt], which is based on the report by [34Juz] that OsS_2 is the only stable intermediate phase in this system.

By means of DTA, XRD, and metallographic analyses, [92Fis] concluded that the L → (Os) + OsS_2 eutectic is at ~50 at.% S and 2000 ± 100 °C. This information is added to the [Massalski2] diagram (Fig. 1). The solubility limit of S in (Os) is unknown.

Os-S crystal structure data are given in Table 1.

Cited References

28Oft: I. Oftadel, *Z. Phys. Chem., 135*, 291-300 (1928) in German.

34Juz: R. Juza, *ZAnorg. Chem., 219*, 129-140 (1934) in German.

92Fis: B.A. Fishman, N.M. Pavlyuchenko, N.V. Blagoveshchenskaya, V.A. Bryukvin, L.I. Blokhina, and A.V. Byalyi, *Izv. Akad. Nauk SSSR, Met.*, (4), 51-54 (1992) in Russian; TR: *Russ. Metall.*, (4), 47-50 (1992).

Table 1 Os-S Crystal Structure Data

Phase	Composition, at.% S	Pearson symbol	Space group	Strukturbericht designation	Prototype	Reference
(Os)	0	*hP*2	$P6_3/mmc$	*A*3	Mg	...
OsS_2	66.7	*cP*12	*Pa*3	*C*2	Fe_2S (pyrite)	[28Oft]
(βS)	100	*mP*48	$P2_1/a$	...	...	...
(αS)	100	*cF*128	*Fddd*	*A*16	αS	...

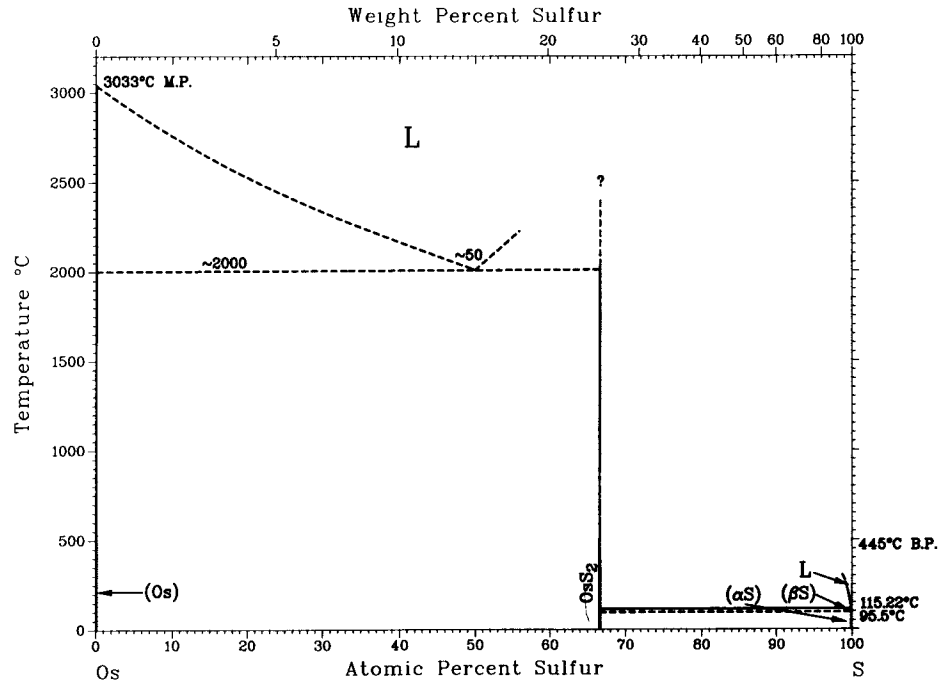

Fig. 1 Os-S phase diagram.