Mo – N (Molybdenum – Nitrogen)

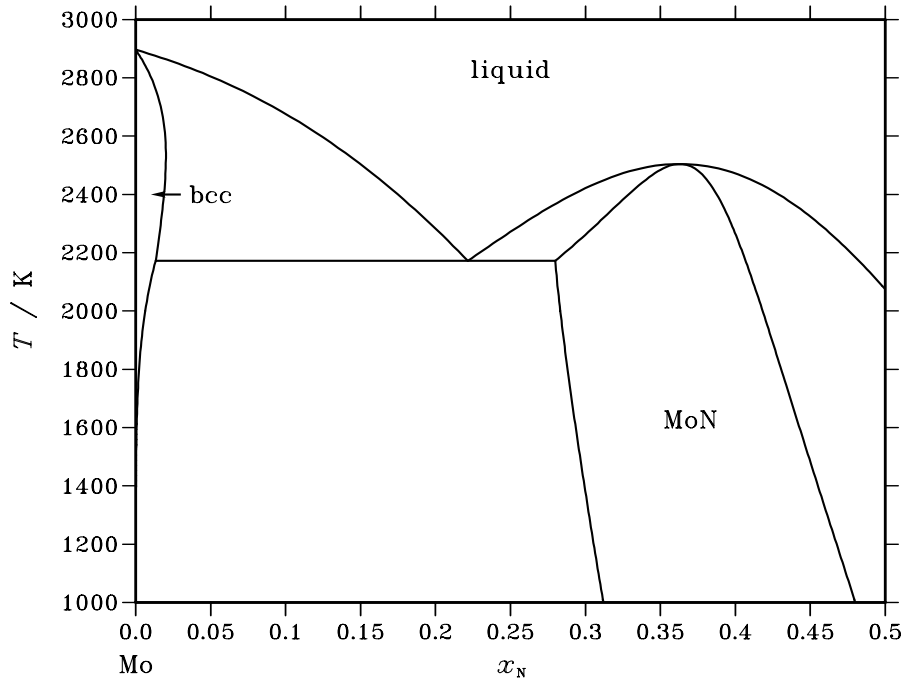

Fig. 1. Calculated phase diagram for the system Mo-N.

Mo and N are both alloying elements in steels and other alloys. The solubility of N in Mo is very small and the hexagonal nitride, Mo_2N, is stable at low temperatures only. A thermochemical assessment of the Mo-N system has been given in [91Fri].

Table I. Phases, structures and models.

Phase	Struktur-bericht	Prototype	Pearson symbol	Space group	SGTE name	Model
liquid					LIQUID	$(Mo,N)_1$
bcc	$A2$	W	$cI2$	$Im\overline{3}m$	BCC_A2	$Mo_1(N,\Box)_3$
MoN	$B1$	NaCl	$cF8$	$Fm\overline{3}m$	FCC_A1	$Mo_1(N,\Box)_1$

Table II. Invariant reactions.

Reaction	Type	T / K	Compositions / x_N			$\Delta_r H$ / (J/mol)
liquid $\rightleftharpoons$ MoN	congruent	2504.3	0.363	0.363		−9540
liquid $\rightleftharpoons$ bcc + MoN	eutectic	2172.0	0.221	0.013	0.280	−15702

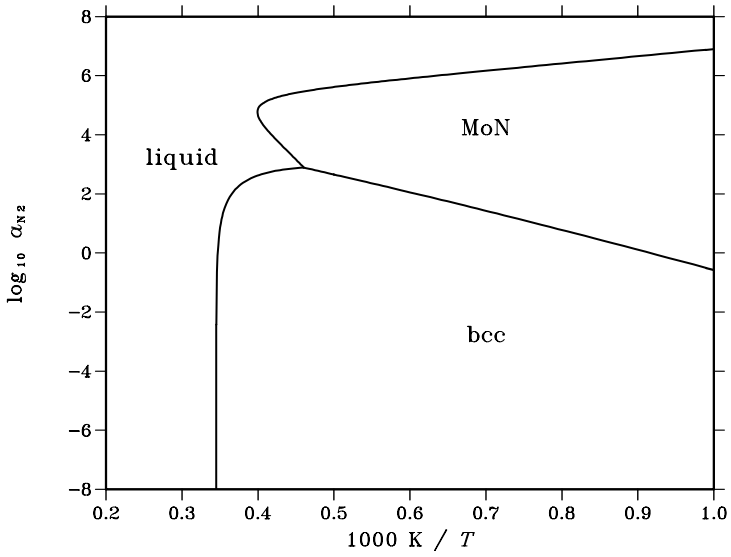

Fig. 2. Calculated temperature-activity phase diagram. Reference state: $\frac{1}{2}N_2$(gas, 0.1 MPa).

References

[91Fri] K. Frisk: Calphad **15** (1991) 79–106.