

Nb-Zr (Niobium-Zirconium)

H. Okamoto

The Zr-Nb phase diagram in [Massalski2] was adopted from [82Abr] who reviewed numerous phase boundary data reported by [55Rog], [60Lun], [72Eff], [72Fle], and [74Mil]. More information is available in [90Per]. Figure 1 shows the Zr-Nb phase diagram calculated by [91Fer]. The diagram of [91Fer] is preferred to that of [82Abr] because thermodynamic requirements are taken into account. Special points of Fig. 1 are summarized in Table 1.

Cited References

- 55Rog: B.A. Rogers and D.F. Atkins, *Trans. Metall. Soc. AIME.*, 7, 1034-1041 (1955).
 60Lun: C.E. Lundin and R.H. Cox, USAEC, TID-12369, 52 p (1960).
 72Eff: P. van Effenterre, Rept. CEA-R-4330, Atomic Energy Commission, Saclay, France (1972) in French.
 72Fle: P.E.J. Flewitt, *J. Appl. Crystallogr.*, 5, 423-425 (1972).
 74Mil: I. Milne and T.R. Finlayson, *Philos. Mag.*, 29, 965-981 (1974).
 82Abr: J.P. Abriata and J.C. Bolcich, *Bull. Alloy Phase Diagrams*, 3(1), 34-44 (1982).
 90Per: A. Peruzzi and J. Bolcich, *J. Nucl. Mater.*, 174, 1-15 (1990).
 91Fer: A. Fernandez Guillermet, *Z. Metallkd.*, 82(6), 478-487 (1991).

Table 1 Special Points of the Zr-Nb Phase Diagram

Reaction	Composition, at.% Nb	Temperature, °C	Reaction type
L ↔ βZr	0	1855	Melting
βZr ↔ αZr	0	863	Allotropic
L ↔ β	21.7	1743	Congruent
β ↔ (αZr) + (Nb)	18.7	620	Monotectoid
β ↔ β ₁ + β ₂	58.8	977	Critical
L ↔ Nb	100	2469	Melting

Note: β = (βZr, Nb).

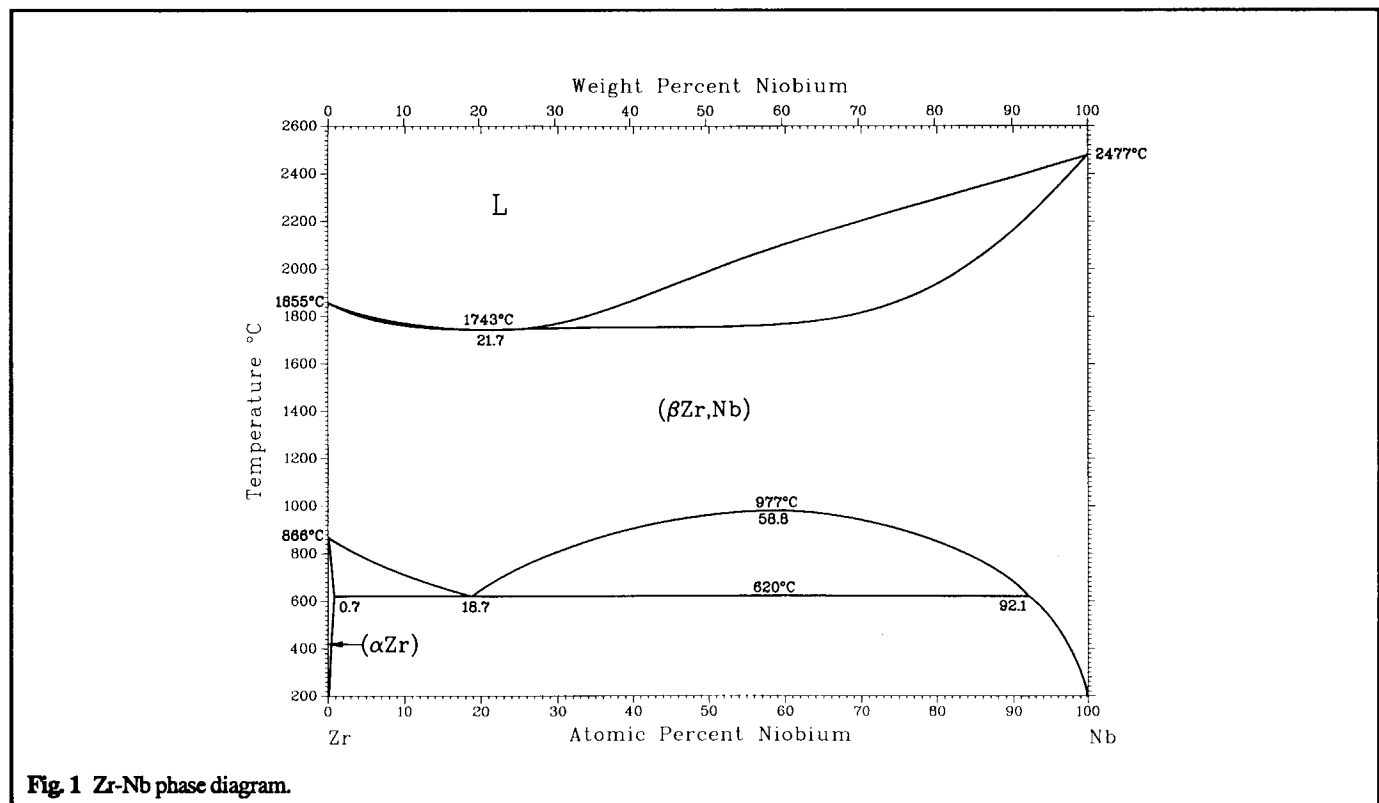


Fig. 1 Zr-Nb phase diagram.