

Ce-Ni (Cerium-Nickel)

H. Okamoto

The Ce-Ni phase diagram in [Massalski2] was adopted from [1991Nas] (dashed lines in Fig. 1). The solid lines in Fig. 1 show the Ce-Ni phase diagram obtained by thermodynamic assessment by [2004Du]. [1991Nas] and [2004Du] are in agreement within the scatter of available experimental phase boundary data. The disagreement is most conspicuous in the liquidus curves of CeNi_3 , Ce_2Ni_7 , and CeNi_5 . In the diagram of [1991Nas], the liquidus of CeNi_3 at the metastable congruent melting point would be much broader than those of other compounds when extrapolated to the stoichiometry. This is unlikely because all liquidus curves of compounds in one phase diagram must have more or less a similar broadness at the congruent melting point [1993Oka]. Therefore, the diagram of [2004Du] is thermodynamically

more consistent (this is a natural consequence of reasonable thermodynamic modeling).

References

- 1991Nas:** P. Nash and C.H. Tung, Ce-Ni (Cerium-Nickel), *Phase Diagrams of Binary Nickel Alloys*, P. Nash, Ed., ASM International, 1991, p 62-67
- 1993Oka:** H. Okamoto and T.B. Massalski, Guidelines for Binary Phase Diagram Assessment, *J. Phase Equilib.*, Vol 14 (No. 3), 1993, p 316-335
- 2004Du:** Z. Du, L. Yang, and G. Ling, Thermodynamic Assessment of the Ce-Ni System, *J. Alloys Compd.*, Vol 375, 2004, p 186-190

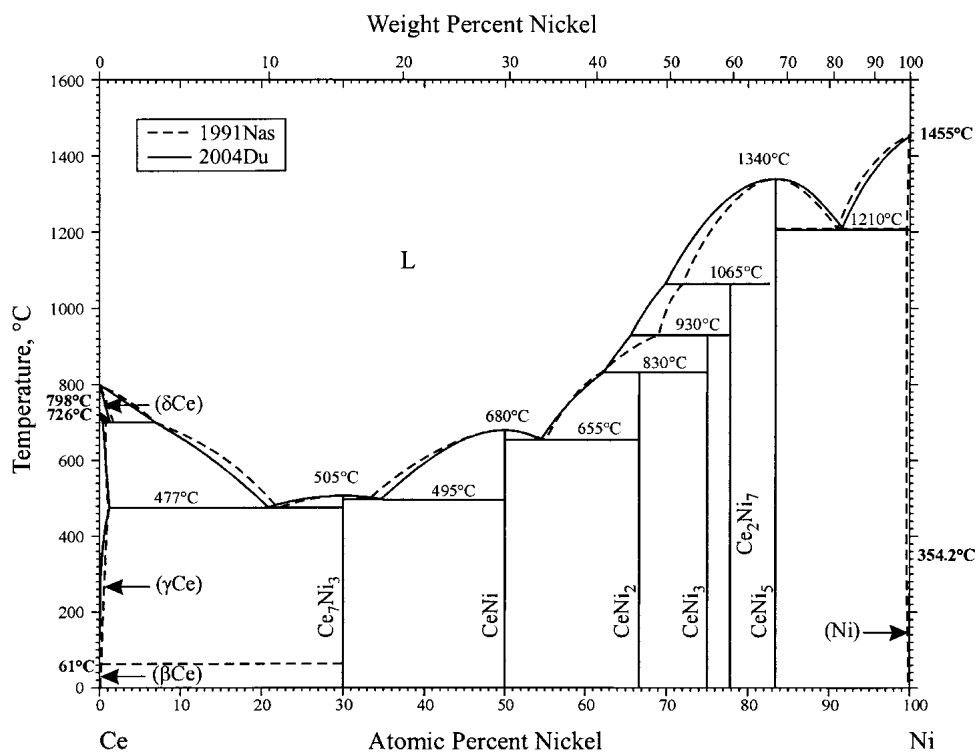


Fig. 1 Ce-Ni phase diagram