JPEDAV (2007) 28:301
DOI: 10.1007/s11669-007-9056-3
1547-7037 ©ASM International

Cr-Ga (Chromium-Gallium)

H. Okamoto

The Cr-Ga phase diagram in [Massalski2] was redrawn from [1972Bor] (dashed lines in Fig. 1). [1999Gro] assessed the Cr-Ga system thermodynamically, but [2005Bel] noticed that the result was in disagreement with the experimental phase diagram of [1972Bor] particularly in the Cr-rich end. Therefore, [2005Bel] measured the enthalpies of formation for Cr_3Ga and $CrGa_4$, and reassessed the Cr-Ga system. The result is shown with solid lines in Fig. 1. The agreement between [1972Bor] and [2005Bel] is good except around the melting point of Cr.

An unusual feature in this phase diagram is that Cr_3Ga and Cr_4Ga are off-stoichiometric. In particular, it is unlikely that the magnitude of the off-stoichiometry is the same for the two modifications of Cr_3Ga, as shown in Fig. 1. Because off-stoichiometric line compounds are not so common in all binary systems in [Massalski2], the Cr-Ga phase diagram may need further confirmation.

References

1972Bor: J.D. Bornand and P. Feschotte, The Binary Chromium-Gallium System, *J. Less Common Met.*, 1972, **29**, p 81-91 in French

1999Gro: J. Gröbner, R. Wenzel, G.G. Fischer, and R. Schmid-Fetzer, Thermodynamic Calculation of the Binary Systems *M*-Ga and Investigation of Ternary *M*-Ga-N Phase Equilibria (*M* = Ni, Co, Pd, Cr), *J. Phase Equilib.*, 1999, **20**(6), p 615-625

2005Bel: A. Belgacem-Bouzida, Y. Djaballah, and M. Notin, Calorimetric Measurement of the Intermetallic Compounds Cr_3Ga and $CrGa_4$ and Thermodynamic Assessment of the (Cr-Ga) System, *J. Alloys Compds*, 2005, **397**, p 155-160

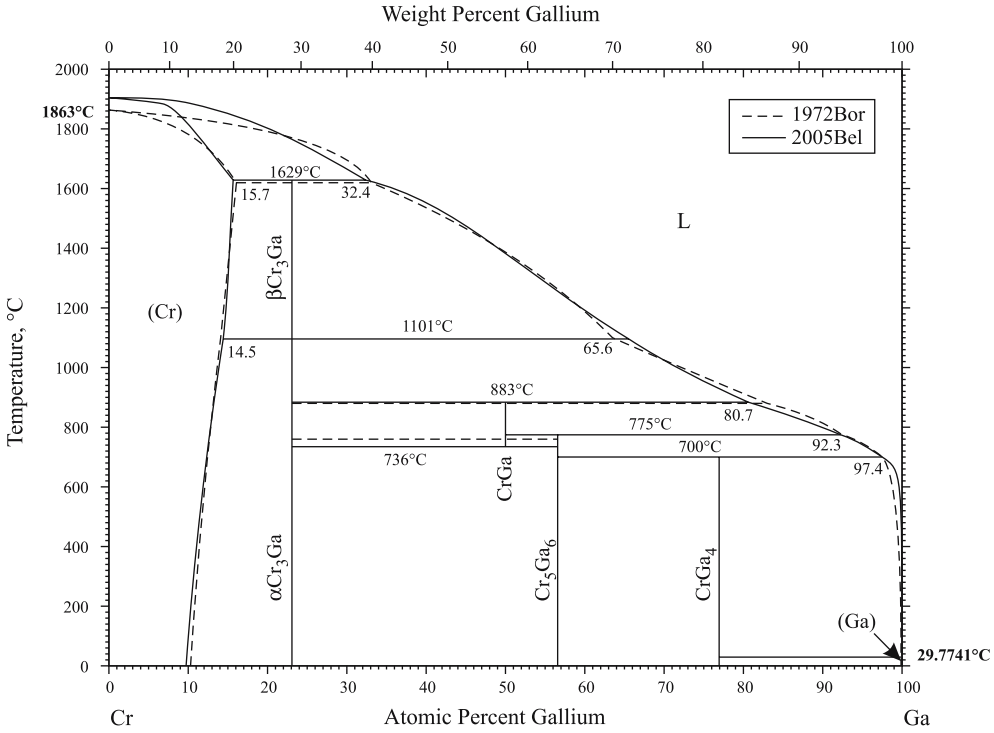

Fig. 1 Cr-Ga phase diagram