Gd-Ge (Gadolinium-Germanium)

H. Okamoto

The Gd-Ge phase diagram in [Massalski2] was redrawn from [1989Gok]. This phase diagram was constructed based primarily on [1980Ere]. The Gd_3Ge_5 phase was a single phase in [1980Ere], but [1989Gok] considered it to be dimorphic with the transition temperature below 600 °C based on crystallographic data reported in the literature.

Figure 1 shows the Gd-Ge phase diagram calculated by [2008Che]. The phase boundary data of [1980Ere] were used in the thermodynamic modeling. Accordingly, the diagrams of [1989Gok] and [2008Che] are similar. The most significant difference is related to the homogeneity range of polymorphic Gd_2Ge_3 and Gd_3Ge_5 phases. In [1989Gok], these phases were shown with a constant width over a wide temperature range (~ 2 at.%, 0 to 1200 °C for Gd_2Ge_3). Because this feature is unlikely, the line compounds shown in Fig. 1 are more plausible. However, the

absence of measurable width for these compounds must be confirmed.

References

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Fig. 1 Gd-Ge phase diagram