

Hf-Ni (Hafnium-Nickel)

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The Ni-Hf phase diagram in [Massalski2] was redrawn from [91Nas]. The NiHf liquidus was drawn from the experimental data of [67Sve] and was unacceptably flat on the Hf side (see [93Oka]). This difficulty was eliminated in a phase diagram calculated by [90Zen]. However, the thermodynamic parameters for the calculation were unrealistic [91Oka1].

The asymmetric liquidus of the problem was solved by [93Yer], who reinvestigated the diagram on the Hf-rich side of NiHf. The Ni-Hf diagram of Fig. 1 is drawn from the data of [91Nas] on the Ni-rich side and of [93Yer] on the Hf-rich side. The melting point of NiHf is accepted from [91Nas] because it is compatible with a smoother change in the liquidus curvature (see [93Oka]).

A remaining problem in Fig. 1 is the $(\beta\text{Hf}) \leftrightarrow \text{L} + (\alpha\text{Hf})$ catatectic reaction occurring at 1155 °C; this is approximately 600 °C below the β to α transformation temperature of pure Hf. The large difference in the temperature causes an impossibly steep slope in the $(\beta\text{Hf}) / (\beta\text{Hf}) + (\alpha\text{Hf})$ phase boundary

(see [91Oka2]). Hence, the phase boundaries related to this reaction are shown with dashed lines. A further investigation is needed to solve this problem.

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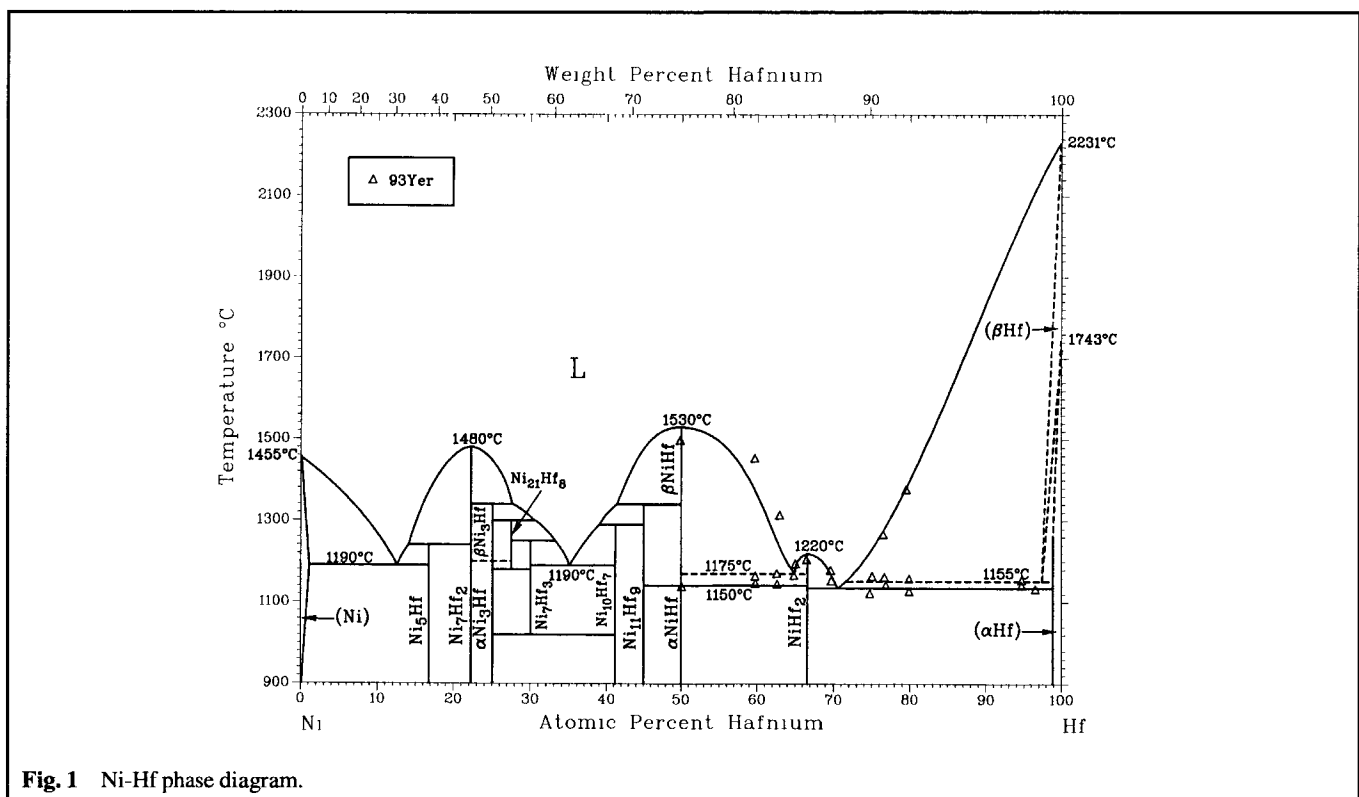


Fig. 1 Ni-Hf phase diagram.