Fe-Rh (Iron-Rhodium)

H. Okamoto

The Fe-Rh phase diagram in [Massalski2] was adopted from [1983Swa]. The phase boundaries were estimated from the martensite and austenite start and finish temperatures observed by [1938Fal].

Figure 1 shows the Fe-Rh phase diagram determined by [2007Bal] by means of differential scanning calorimetry, electron probe microanalysis, and transmission electron microscopy. It turned out that the phase diagram estimated by [1983Swa] was excellent. The only difference in the phase relationship between [1983Swa] and [2007Bal] was that the antiferromagnetic region in Fig. 1 was shown as another phase α'' in [1983Swa].

Table 1 shows Fe-Rh crystal structure data.

References

1938Fal: M. Fallot, The Alloys of Iron with Metals of the Platinum Family, *Ann. Phys.*, 1938, **10**, p 291-332, in French

1983Swa: L.J. Swartzendruber, The Fe-Rh (Iron-Rhodium) System, *Bull. Alloy Phase Diagr.*, 1983, **4**(2), p 155-160

2007Bal: J. Balum, L. Eleno, and G. Inden, Phase Equilibria in the Fe-Rh-Ti System. I. Experimental Results, *Intermetallics*, 2007, **15**, p 1237-1247

Table 1   Fe-Rh

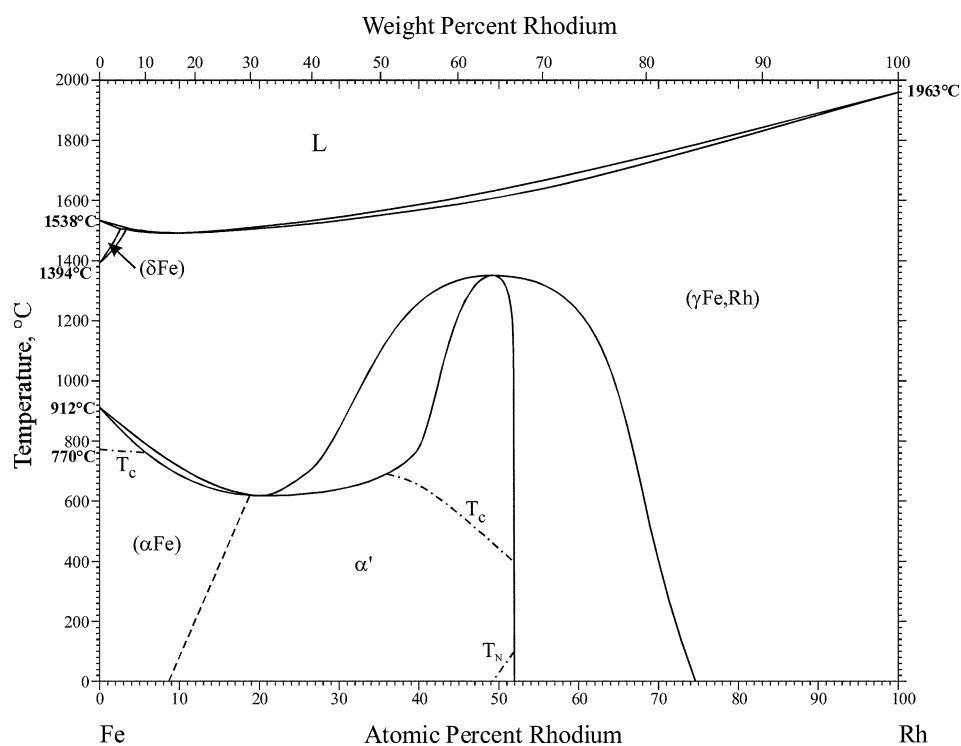| Phase	Composition, at.% Rh	Pearson symbol	Space group	Strukturbericht designation	Prototype
(δFe)	0-2	cI2	Im$\bar{3}$m	A2	W
(γFe, Rh)	0-100	cF4	Fm$\bar{3}$m	A1	Cu
(αFe)	0-19	cI2	Im$\bar{3}$m	A2	W
α′	?-52	cP2	Pm$\bar{3}$m	B2	CsCl

Fig. 1   Fe-Rh phase diagram