Pt-Si (Platinum-Silicon)

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The Pt-Si phase diagram in [Massalski2] was redrawn from [91Tan] (advance copy), which was primarily based on [36Vor]. The existence of Pt_3Si (bimorphic), $\text{Pt}_{12}\text{Si}_5$ (bimorphic), Pt_2Si (bimorphic), Pt_6Si_5 , and PtSi was reported.

Figure 1 shows the Pt-Si phase diagram revised in detail (150 alloys) by [93Mas] by means of DTA, XRD, and microprobe analysis. The existence of Pt_3Si , Pt_6Si_5 , and PtSi was confirmed. Pt_5Si_2 (28.6 at.% Si) was found instead of $\text{Pt}_{12}\text{Si}_5$ (29.5 at.% Si). In addition, $\text{Pt}_{25}\text{Si}_7$ (21.8 at.% Si) and $\text{Pt}_{17}\text{Si}_8$ (bimorphic, 32.0 at.% Si) were found (Fig. 1).

This phase diagram may need further confirmation because the newly discovered compounds have unique atomic configurations,

their crystal structures are undetermined, and it is unlikely that two compounds with similar compositions ($\text{Pt}_{17}\text{Si}_8$ and Pt_2Si) coexist in a wide temperature range [93Oka].

Cited References

- 36Vor:** N.M. Voronov, *Izv. Sektora Platiny*, 13, 145-166 (1936) in Russian.
91Tan: L.E. Tanner and H. Okamoto, *J. Phase Equilibria*, 12(5), 571-574 (1991).
93Mas: R. Massara and P. Feschotte, *J. Alloy. Compd.*, 201, 223-237 (1993) in French.
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Fig. 1 Pt-Si phase diagram.