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Bi-Rh (Bismuth-Rhodium)

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The Bi-Rh phase diagram in [Massalski2] was redrawn from [Elliott].

[2009Wei] reinvestigated the Bi-rich part of this system by applying high-temperature centrifugation, DTA/DSC measurements, and x-ray diffraction analysis. Figure 1 shows the Bi-Rh phase diagram determined by [2009Wei] except the region involving the BiRh phase. Because the peritectic formation of BiRh in Fig. 1 was out of the range in the [2009Wei] diagram, it was adopted from [Elliott]. Bi_2Rh was shown to exist in three polymorphic forms in [Massalski2]. However, [2009Wei] found only two forms.

Bi-Rh crystal structure data are shown in Table 1.

In addition to the phases shown in Fig. 1, [2009Wei] found a metastable phase $Bi_{14}Rh_3$ (17.6 at.% Rh).

References

2009Wei: F. Weitzer, W. Schnelle, R.C. Gil, S. Hoffmann, R. Giedigkeit, and Y. Grin, Phase Relationship and Superconductivity in the Bi-Rich Part of the Binary System Rh-Bi, *Calphad*, 2009, **33**, p 27-30

Table 1 Bi-Rh crystal structure data

Phase	Composition, at.% Rh	Pearson symbol	Space group	Strukturbericht designation	Prototype
(Bi)	0	*hR*2	$R\bar{3}m$	*A*7	αAs
Bi_4Rh	20	*cI*20	$Ia\bar{3}d$	···	···
Bi_3Rh	25	*oP*16	*Pnma*	···	···
βBi_2Rh	33.3	*aP**	$P\bar{1}$	···	···
αBi_2Rh	33.3	*mP*12	$P2_1/c$	···	$CoSb_2$
BiRh	45-<48	*hP*4	$P6_3/mmc$	$B8_1$	NiAs

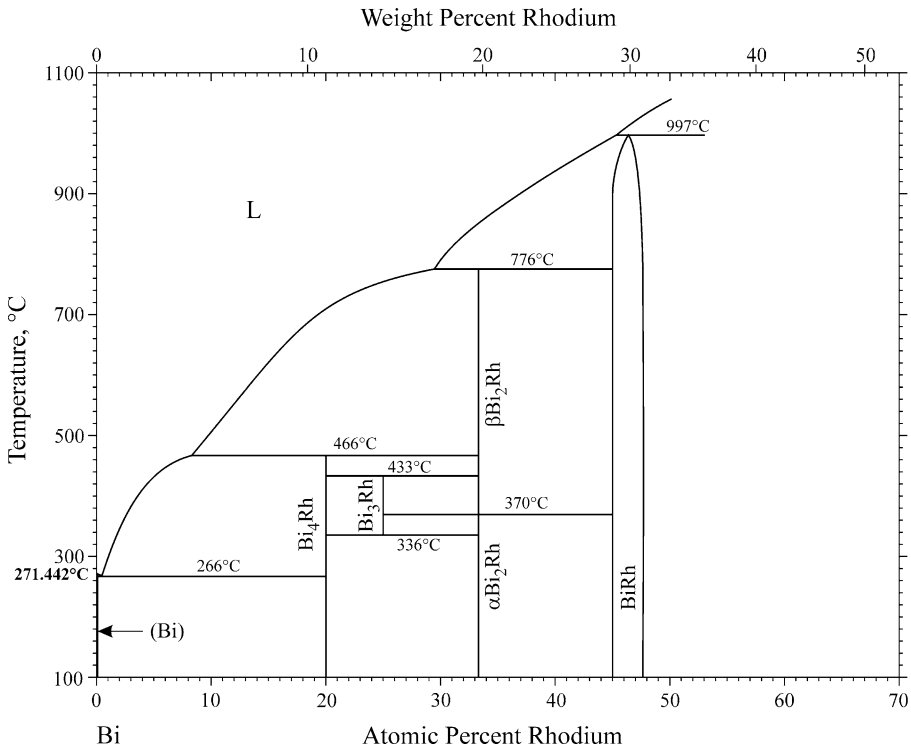

Fig. 1 Bi-Rh phase diagram