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Au-Er (Gold-Erbium)

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The Au-Er phase diagram in [Massalski2] was redrawn from [1987Gsc]. This phase diagram was derived by thermodynamic modeling by assuming systematic changes in thermodynamic parameters of related phases in the gold-rare earth systems.

Figure 1 shows the Au-Er phase diagram determined by [2002Sac] by means of x-ray powder diffraction, optical and scanning electron microscopy, electron probe microanalysis, and differential thermal analysis. A new phase $Au_{10}Er_7$ was found in this work.

Table 1 shows Au-Er crystal structure data.

References

1987Gsc: K.A. Gschneidner Jr., F.W. Calderwood, H. Okamoto, and T.B. Massalski, The Au-Er (Gold-Erbium) System, in *Phase Diagrams of Binary Gold Alloys.*, H. Okamoto and T.B. Massalski, Eds., ASM International, Metals Park, OH, 1987, p 98-101

2002Sac: A. Saccone, D. Macciò, S. Delfino, and R. Ferro, Alloying Behavior of the Rare Earth Metals with Gold: The Ho-Au, Er-Au, and Tm-Au Systems, *Intermetallics*, 2002, **10**(9), p 903-913

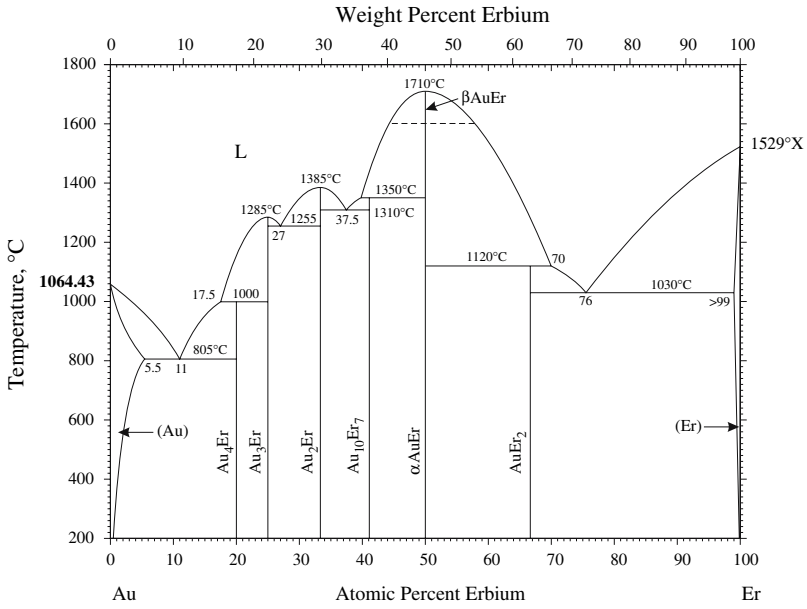

Fig. 1 Au-Er phase diagram

Table 1 Au-Er crystal structure data

Phase	Composition, at.% Er	Pearson symbol	Space group	Struktur-bericht designation	Prototype
(Au)	0-5.5	*cF*4	$Fm\bar{3}m$	*A*1	Cu
Au_4Er	20	*tI*10	*I*4/*m*	$D1_a$	$MoNi_4$
Au_3Er	25	*oP*8	*Pmmn*	$D0_a$	$\beta TiCu_3$
Au_2Er	33.3	*tI*6	*I*4/*mmm*	$C11_b$	$MoSi_2$
$Au_{10}Er_7$	41.1	*tI*136	$I4_1/acd$	...	$Au_{10}Gd_7$
βAuEr	50	*cP*2	$Pm\bar{3}m$	*B*2	CsCl
αAuEr	50	*oC*8	*Cmcm*	B_f	CrB
$AuEr_2$	66.7	*oP*12	*Pnma*	*C*23	Co_2Si
(Er)	>99-100	*hP*2	$P6_3/mmc$	*A*3	Mg