Cu-La (Copper-Lanthanum)

H. Okamoto

The Cu-La phase diagram in [Massalski2] was adopted from [1981Cha]. [1991Oka] modified this phase diagram based on more recent information given by [1985Mey], [1987Yam], and [1990Nak] (solid lines in Fig. 1). [1999Du] assessed this system by thermodynamic modeling. The dashed lines in Fig. 1 show only the liquidus calculated by [1999Du], because other boundaries are almost identical with [1991Oka]. Presumably, the diagram of [1999Du] is a better representation of this system, because thermodynamic properties were also taken into account. Experimental liquidus data obtained by [1989Qi] were consistent with this phase diagram.

Table 1 shows Cu-La crystal structure data summarized by [1991Oka].

Table 1 Cu-La crystal structure data

Phase	Composition, at.% La	Pearson symbol	Space group	Strukturbericht designation	Prototype
(Cu)	0	*cF*4	$Fm\bar{3}m$	*A*1	Cu
X	7.5	…	…	…	…
βCu_6La	14.3	*oP*28	*Pnma*	…	$CeCu_6$
αCu_6La	14.3	*mP**	…	…	…
Cu_5La	16.7	*hP*6	*P*6/*mmm*	$D2_d$	$CaCu_5$
Cu_4La	20	*tI*90	$I\bar{4}m2$	…	…
Cu_2La	33.3	*hP*3	*P*6/*mmm*	*C*32	AlB_2
CuLa	50	*oP*8	*Pnma*	*B*27	FeB
(γLa)	100	*cI*2	$Im\bar{3}m$	*A*2	W
(βLa)	100	*cF*4	$Fm\bar{3}m$	*A*1	Cu
(αLa)	100	*hP*4	$P6_3/mmc$	*A*3′	αLa

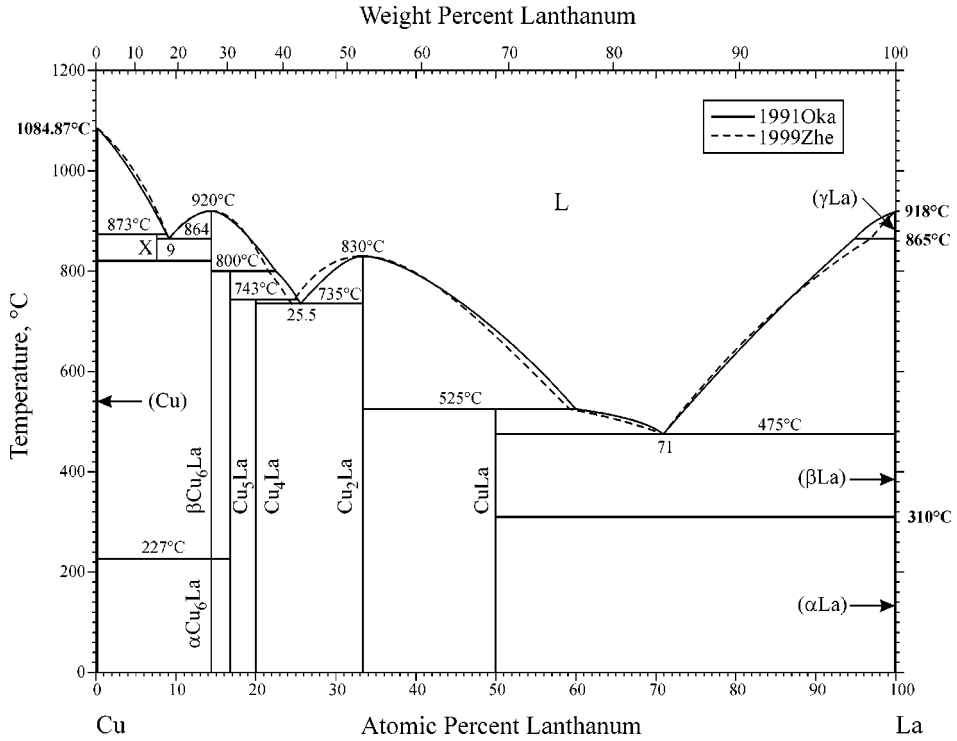

Fig. 1 Cu-La phase diagram

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