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Ce-Y (Cerium-Yttrium)

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The Ce-Y phase diagram in [Massalski2] was redrawn from [1982Gsc]. However, it contained an impossible phase field (βCe,αY), which is a continuous single phase field extending from (βCe) to (αY) with different crystal structures.

This problem was solved in the Ce-Y phase diagram calculated by [2006Men] (Fig. 1) based on more recent experimental data of [1997Fla]. The δ phase shown by [1982Gsc] at 43 to 40 at.% Y and below 700 °C is absent in Fig. 1.

Table 1 shows Ce-Y crystal structure data.

Table 1 Ce-Y crystal structure data

Phase	Composition, at.% Y	Pearson symbol	Space group	Strukturbericht designation	Prototype
(δCe,βY)	0 to 100	*cI*2	$Im\bar{3}m$	*A*2	W
(γCe)	0 to 12.7	*cF*4	$Fm\bar{3}m$	*A*1	Cu
(βCe)	0 to 47	*hP*4	$P6_3/mmc$	*A*3′	αLa
(αY)	70.1 to 100	*hP*2	$P6_3/mmc$	*A*3	Mg

References

1982Gsc: K.A. Gschneidner, Jr. and F.W. Calderwood, The Ce-Y (Cerium-Yttrium) System, *Bull. Alloy Phase Diagrams*, 1982, **3**(2), p 192-194

1997Fla: H. Flandorfer, M. Giovannini, A. Saccone, P. Rogl, and R. Ferro, The Ce-Mg-Y System, *Metall. Mater. Trans., A*, 1997, **A28**(2), p 265-275

2006Men: F.G. Meng, L.B. Liu, H.S. Liu, and Z.P. Jin, Thermodynamic Assessment of the Ce-Y System, *Calphad*, 2006, **30**(3), p 323-325

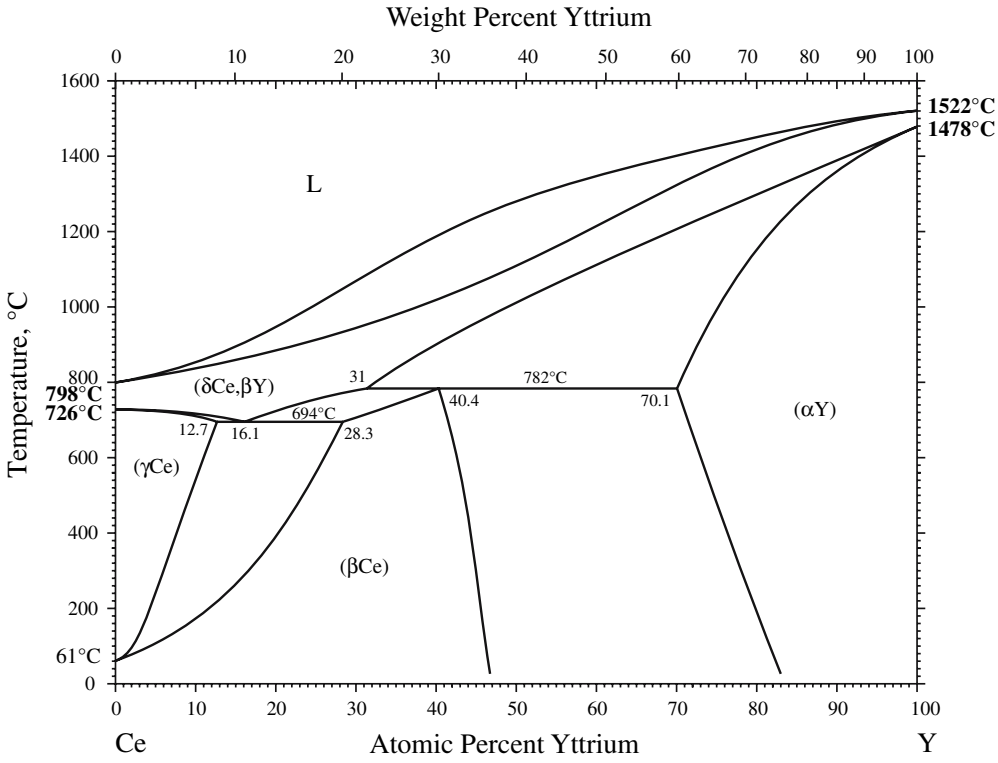

Fig. 1 Ce-Y phase diagram