

Al-Ru (Aluminum-Ruthenium)

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[1997Oka] updated the Al-Ru phase diagram of [Masalski2]. Subsequently, [2004Oka] showed the Al-Ru diagram thermodynamically assessed by [2003Pri]. Part of the [2003Pri] diagram is shown with dashed line in Fig. 1. Since then [2003Mi] reinvestigated the Al-rich part of the Al-Ru phase diagram by scanning and transmission electron microscopy, powder x-ray diffraction, and differential thermal analysis. The results are shown with solid lines in Fig. 1. A new phase Al_5Ru_2 was discovered. Due to the significant difference between [2003Mi] and [2003Pri], as shown in Fig. 1, a further thermodynamic assessment may be needed.

Table 1 shows Al-Ru crystal structure data given in

[Massalski2] with additional information on Al_5Ru_2 reported by [2003Mi].

References

- 1997Oka:** H. Okamoto, Al-Ru (Aluminum-Ruthenium), *J. Phase Equilibria*, 1997, **18**(1), p 105
- 2003Mi:** S. Mi, S. Balanetsky, and B. Grushko, A Study of the Al-Rich Part of the Al-Ru Alloys System, *Intermetallics*, 2003, **11**(7), p 643-649
- 2003Pri:** S.N. Prins, L.A. Cornish, W.E. Stumpf, and B. Sundman, Thermodynamic Assessment of the Al-Ru System, *Calphad*, 2003, **27**(1), p 79-90
- 2004Oka:** H. Okamoto, Al-Ru (Aluminum-Ruthenium), *J. Phase Equilibria Diffusion*, 2004, **25**(2), p 196

Table 1 Al-Ru crystal structure data

Phase	Composition(a), at.% Ru	Pearson symbol	Space group	Strukturbericht designation	Prototype
(Al)	0	<i>cF4</i>	<i>Fm$\bar{3}m$</i>	A1	Cu
Al_6Ru	14.3	<i>oC28</i>	<i>Cmcm</i>
$\text{Al}_{13}\text{Ru}_4$	23.5	<i>mC102</i>	<i>C2/m</i>
Al_5Ru_2	28.6	<i>oC16</i>	<i>Cmcm</i>
Al_2Ru	33.3	<i>tI6</i>	<i>I4/mmm</i>	C11_a	CaC_2
		<i>m**</i>	...	C11_a	...
		<i>oF24</i>	<i>Fddd</i>	C54	TiS_2
Al_3Ru_2	40	<i>hP5</i>	<i>P$\bar{3}m1$</i>	D5_{13}	Al_3Ni_2
		<i>tI10</i>	<i>I4/mmm</i>
AlRu	50(a)	<i>cP2</i>	<i>Pm$\bar{3}m$</i>	B2	CsCl
(Ru)	100	<i>hP2</i>	<i>P6$_3$/mmc</i>	A3	Mg

(a) Stoichiometric composition

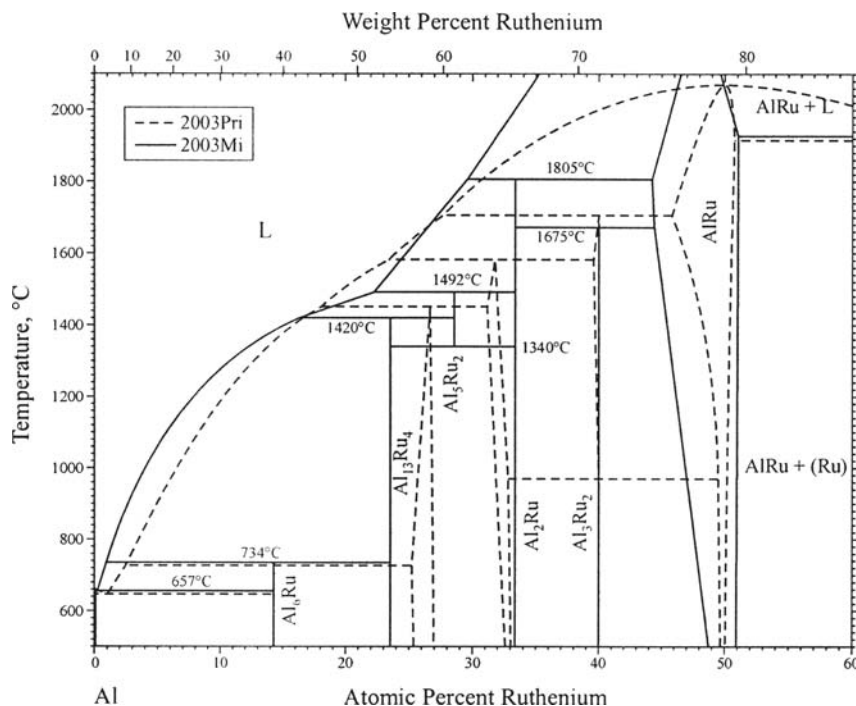


Fig. 1 Al-Ru phase diagram