

Al – Lu (Aluminum – Lutetium)

Crystal structure

Okamoto [93 Oka], in a short review, pointed out that the existence of all five intermediate phases mentioned by Gschneidner [88 Gsc] has been confirmed [60 Has], [72 Ian], [89 Kuz] and [92 Kuz]. Their crystal structures are collected in Table 1.

Table 1. Al–Lu. Crystal structure of intermediate phases [93 Oka], [Pearson].

Phase	Composition [at% Lu]	Structure	Prototype	Lattice parameters [nm]			Reference
				<i>a</i>	<i>b</i>	<i>c</i>	
Al ₃ Lu	25	cub	AuCu ₃	0.4191			[72 Ian], [73 Hav]
Al ₂ Lu	33.3	cub	Cu ₂ Mg	0.7742			[60 Has]
AlLu	50	ort	AlDy	0.5798	1.1124	0.5520	[89 Kuz]
Al ₂ Lu ₃	60	tet	Al ₂ Zr ₃	0.8051		0.7363	[89 Kuz], [89 Sau]
AlLu ₂	66.7	ort	PbCl ₂				[92 Kuz], [89 Kuz]

References

- [60 Has] Haszuko, S.E.: Trans. Metall. Soc. AIME **281** (1960) 958
- [72 Ian] Iandelli, A., Palenzona, J. A.: Less-Common Met. **29** (1972) 293
- [73 Hav] Havinga, E.E., Buschow, K.H.J., van Daal, H.J.: Solid State Comm. **13** (1973) 621
- [88 Gsc] Gschneidner, K.A., Jr., Calderwood, F.W.: Bull. Alloy Phase Diagrams **9** (1988) 690
- [89 Kuz] Kuzma, Yu. B., Stelmakhovich, B.M., Galamushka, L.I.: Dop. Akad. Nauk Ukr. R.S.R. **B10** (1989) 39
- [89 Sau] Saunders, N.: Z. Metallkde. **80** (1989) 894
- [92 Kuz] Kuzma, Yu. B., Stelmakhovich, B.M., Galamushka, L.I.: Izv. Russ. Akad. Nauk Met., (1) (1992) 216; Russ. Metall., (1) (1992) 190
- [93 Oka] Okamoto, H.: J. Phase Equilibria **14** (1993) 394
- [Pearson] Pearson, W.B.: "Handbook of Lattice Spacings and Structure of Metals and Alloys", Pergamon Press, New York, (1958), Vol. 1, (1967) Vol. 2