

As – Eu (Arsenic – Europium)

Crystal structure

A thorough discussion is given by Gschneidner et al. in [Massalski].

Table 1. As–Eu. Crystal structure and lattice parameters of intermediate phases taken from [Massalski] and [Pearson].

Phase	Concentration [at% As]	Structure	Prototype	Lattice parameters [nm]			Reference
				<i>a</i>	<i>b</i>	<i>c</i>	
α -As ₃ Eu ₅	37.5	hex	Mn ₅ Si ₃	0.88526		0.70376	[78 Tay]
β -As ₃ Eu ₅ *	37.5	hex	Ca ₅ Pb ₃	1.5245		0.72501	[78 Tay]
As ₂ Eu _{3+x}	< 40	tet					
As ₂ Eu _{3+y}	< 40						
**							
As ₂ Eu ₃	40	tet		1.6464		2.2246	[78 Tay]
α -As ₃ Eu ₄	42.8	hex		1.3073		1.5654	[79 Hul]
β -As ₃ Eu ₄	42.8	cub	anti- Th ₃ P ₄	0.92944			[78 Wan1]
As ₄ Eu ₅	44.4	ort	As ₅ Eu ₄	1.5806	0.80222	0.80584	[78 Wan2]
As ₁₀ Eu ₁₁	44.76	ort	distorted Ho ₁₁ Ge ₁₀	1.1255	1.1715	1.7394	[78 Tay]
AsEu	50	hex	Na ₂ O ₂	0.81575		0.61378	[71 Ono]
As ₄ Eu ₃	57.1	ort	Eu ₃ As ₄	1.46438	1.76416	0.58857	[71 Ono]
As ₃ Eu ₂	60	mon	Eu ₂ As ₃	1.2325	0.59559	1.8611	[78 Wan1]
					$\beta = 130.72^\circ$		
As _{2.93} Eu _{2.07}	58.6	mon		1.41058	0.59559	1.23250	[71 Ono]
					$\beta = 90.744^\circ$		
As ₂ Eu	66.7	ort		0.71433	0.69195	0.60486	[71 Ono]
α -As ₃ Eu	75	mon	BaP ₃	0.9471	0.7598	0.5778	[81 Bau]
					$\beta = 112.53^\circ$		
β -As ₃ Eu	75	tri		0.5911	0.5626	0.6450	[76 Bri]
				$\alpha =$ 120.7°	$\beta = 92.3^\circ$	$\gamma =$ 104.6°	

* $0 < x < y$

** y close b at <0.3

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