Eu_5As_3	*hP*72	(186) $P6_3mc$ – dc^{10}

Eu_5As_3 ht [1]
Structural features: $AsEu_8Eu$ monocapped square antiprisms ($AsEu_6Eu_3$ tricapped trigonal prisms) share atoms to form a 3D-framework with infinite columns of face-linked Eu_6 octahedra and infinite -Eu- chains parallel to [001]. Variant of Ca_5Pb_3 with site splitting; deformation derivative of Mn_5Si_3.

Wang Y. et al. (1978) [1]
As_3Eu_5
a = 1.5243, c = 0.72517 nm, c/a = 0.476, V = 1.4592 nm^3, Z = 6

site	Wyck.	sym.	*x*	*y*	*z*	occ.	atomic environment
Eu1	12*d*	1	0.0163	0.3435	0.3217		
Eu2	6*c*	.*m*.	0.0823	0.9177	0.0918	0.24	
Eu3	6*c*	.*m*.	0.0866	0.9134	0.0095	0.76	
As4	6*c*	.*m*.	0.2022	0.7978	0.0394		
Eu5	6*c*	.*m*.	0.4166	0.5834	0.0000	0.42	
Eu6	6*c*	.*m*.	0.4167	0.5833	0.0768	0.36	
Eu7	6*c*	.*m*.	0.4183	0.5817	0.1627	0.22	
As8	6*c*	.*m*.	0.5365	0.4635	0.0728		
Eu9	6*c*	.*m*.	0.7502	0.2498	0.1679	0.46	
Eu10	6*c*	.*m*.	0.7503	0.2497	0.1126	0.54	
As11	6*c*	.*m*.	0.8694	0.1306	0.0717		

Transformation from published data: origin shift 0 0 0.17830
Experimental: single crystal, diffractometer, X-rays, wR = 0.045

Remarks: Phase stable at T > 1075 K. Refinement of the occupancy of site As11 showed no significant deviation from unity; we set the occupancy of site As8 equal to unity (published value 1.10(3)). Short interatomic distances for partly occupied site(s). Preliminary data in [2].

References: [1] Wang Y., Calvert L.D., Gabe E.J., Taylor J.B. (1978), Acta Crystallogr. B 34, 2281-2284. [2] Taylor J.B., Calvert L.D., Utsunomiya T., Wang Y., Despault J.G. (1978), J. Less-Common Met. 57, 39-51.