THE CRYSTAL STRUCTURE OF Mn₃Ga

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Abstract

The crystal structure of Mn_3Ga has been determined by means of the X-ray powder method. The unit cell is hexagonal, with $a = 5.4065$ Å, $c = 4.3537$ Å, and $c/a = 0.8053$ at 20°C for the alloy containing 26.8 at. % Ga. The space group is $D_{6h}^4-P6_3/mmc$. Each unit cell contains two formula units, the six Mn atoms being situated at the $6(h)$ positions with $x_h = 0.837$, and the two Ga atoms at the $2(c)$ positions. It is a deformed form of the DO_{19} type close-packed ordered structure. The homogeneity range corresponding to this structure in the Mn-Ga system does not include the ideal composition however, but is displaced to the Ga-rich side.