THE CRYSTAL STRUCTURE OF $Y_3Cd_9Zn_2$

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Synchrotron powder diffraction data have been used to examine the crystal structure of $Y_3Cd_9Zn_2$. The proposed stoichiometry of this compound suggested a relationship to the structure of orthorhombic Y_3Zn_{11}-type compounds (Sree Harsha & Ryba, 1964). However, Hahn & Ryba (1969) found that $Y_3Cd_9Zn_2$ is hexagonal with a rather larger unit cell, and thus a much more complex structure. Charge flipping was used to obtain an initial model for the structure; this model showed a strong resemblance to the structure of $Y_{13}Cd_{58}$ (Cromer & Larsen, 1972), which was used in a series of difference Fourier maps to determine the occupancies of the various atom sites. The final atom arrangement was obtained from Rietveld refinement; the structure was found to be extensively disordered.