Structural Study of the Disordered $RE\text{Cd}_6$ Quasicrystal Approximants ($RE = \text{Tb, Ho, Er, Tm and Lu}$)

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Dedicated to Professor Wolfgang Jeitschko on the occasion of his 70th birthday

The crystal structures of approximants $RE\text{Cd}_6$ ($RE = \text{Tb, Ho, Er, Tm and Lu}$) have been refined from single crystal X-ray diffraction data. This work is a continuation of a previous study of $M\text{Cd}_6$ approximants [1] in which the different types of disorder of the central Cd$_4$ tetrahedra located in the dodecahedral cavities were examined. The structures of the title compounds are all similar to GdCd$_6$ and disorder was observed in all these compounds. There is a correlation between the anisotropic displacement parameter and the unit cell dimension.

Key words: Quasicrystal Approximant, Rare Earth Cadmide