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Investigation of a novel iron-based cubic compound RhFe₃C

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A polycrystalline sample with the nominal composition RhFe₃C was synthesized and its properties were investigated using powder x-ray diffraction (XRD), transmission Mössbauer spectroscopy and heat capacity Cp(T) measurements. The XRD data shows that RhFe₃C has a cubic structure with a lattice parameter of 5.8907(3) Å. The room temperature Mössbauer spectrum of RhFe₃C exhibits magnetic structure with three spectral components assigned to three different iron sites. The site assignments will be discussed in detail. The Cp(T) data show a distinct behavior and can be fitted with the Debye model with an additional Einstein term. The extracted fitted value of the Debye temperature was determined as 371(1) K. The results obtained from the different experiments will be discussed and compared with literature.

Apply to be considered for a student ; award (Yes / No)?

yes

Level for award;(Hons, MSc, PhD, N/A)?

MSc

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