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An over view of Cr substituted Fe-based nanocrystalline Fe_{73.5-x}Cr_xCu₁Nb₃Si_{13.5}B₉ alloys

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ABSTRACT

The paper focuses on the experimental investigations of the structural, crystallization and magnetic behavior of $\text{Fe}_{73.5-x}\text{Cr}_x\text{Cu}_1\text{Nb}_3\text{Si}_{13.5}\text{B}_9$ ($x = 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 12.5, 15$ & 17.5) alloys in the amorphous and annealed states. The samples are initially prepared in the amorphous state in the form of thin ribbons by rapid-quenching technique and subsequently annealed. The Characterization of the samples is performed by X-ray diffraction. The crystallization behavior has been studied by Differential Scanning Calorimetry (DSC). Magnetic properties have been measured using Superconducting Quantum Interference Device (SQUID) magnetometer, Vibrating Sample Magnetometer (VSM), Permagraph and LCR meter.