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The effect of Co addition on magnetic and structural properties of nanocrystalline (Fe,Co)-Si-B-P-Cu alloys

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Abstract

Magnetic properties of amorphous and nanocrystalline $Fe_{85.2-x}Co_xSi_{0.5}B_{9.5}P_4Cu_{0.8}$ (x = 0, 4, 10, 15, 20, 25, 35, 40, 50 and 57 at%) alloys have been investigated and their detailed structural parameters have been quantitatively investigated by X-ray diffraction, transmission electron microscopy (TEM), small angle X-ray scattering (SAXS) and three dimensional atom probe (3DAP). The nanocrystalline structure that forms by annealing the melt-spun amorphous ribbon at above 400 °C comprises a bcc phase and a residual amorphous phase. Both