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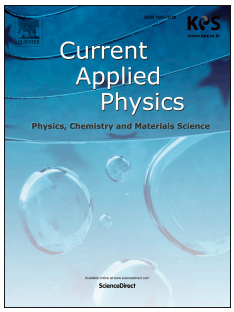

Annealing effect on the magnetic properties of cobalt-based amorphous alloys

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Annealing Effect on the Magnetic Properties of Cobalt-based Amorphous Alloys

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The annealing effects on the magnetic properties of the $Co_{72}B_{19.2}Si_{4.8}Cr_4$ and $Co_{64.8}Fe_{7.2}B_{19.2}Si_{4.8}Cr_4$ alloy systems are reported. Ribbon samples with 2 mm width and 20-30 μm thickness for both compositions were synthesized by melt spinning. The as-spun samples were subjected to annealing at various temperatures below their glass transition temperatures for 15 min in a vacuum. The annealed systems tended to have improved soft magnetic characteristics, including higher saturation magnetization and lower coercivity values, while maintaining their amorphous phase. A high saturation magnetization of 87.8 emu g^{-1} and low coercivity of 0.084 Oe were obtained for $Co_{64.8}Fe_{7.2}B_{19.2}Si_{4.8}Cr_4$ after annealing at 400 °C, which is a significant improvement in comparison to the magnetic properties of the as-spun ribbons.

Keywords: Annealing, Co-based, Amorphous, Soft magnetic, Ferromagnetic

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