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Magnetic properties of CoFe_2O_4 powders and thin films grown by a sol-gel method

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Abstract

Ultra-fine CoFe_2O_4 particles and thin films were fabricated by a sol-gel method and their magnetic and structural properties were investigated. Co-ferrite powders fired at and above 450°C had only a single phase spinel structure and became ferrimagnetic. Powders annealed at 200°C and 350°C had a typical spinel structure, however, they showed a transition from the paramagnetic to ferrimagnetic state as the measuring temperature decreased from the room to liquid nitrogen temperature. Co-ferrite films annealed at 650°C had a single phase spinel structure without any preferred crystallite orientation and the in-plane and perpendicular coercivity. The maximum value of the coercivity was 2550 Oe for the thin film fired at 850°C . © 1998 Elsevier Science B.V. All rights reserved.

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