

Growth of Co Nanoparticles from Small Cobalt Seed Particles by Thermal Decomposition of Cobalt Acetate

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A high coercivity over 1.8 kOe at RT may be unnecessary in patterned media because the transition width is determined lithographically [1]. The coercivity about 500 Oe at RT might be sufficient to be stable with respect to demagnetizing field from the surrounding [1]. In this study, we synthesized monodisperse cobalt nanoparticles with moderate coercivities by two steps: preparation of cobalt seed particles and a subsequent growth stage. By the additional growth stage of the seed particles, we synthesized monodisperse cobalt nanoparticles with coercivity of 561.9 Oe, which can be used in patterned media. The supply of supplemental precursor should be made to form crystalline structures with higher coercivity. Finally, we could synthesize Co nanoparticles with a relatively high coercivity without annealing at a high temperature.

[1] C.A. Ross, Annu. Rev. Mater. Res. 31, 203 (2001).