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Effect of the deposition field on the magnetic properties of epitaxial Fe_3O_4 thin films JIAN DOU, MICHAEL PECHAN, Department of Physics, Miami University, PRIYANGA JAYATHILAKA, DARYL WILLIAMS, CHRIS BAUER, CASEY MILLER, Department of Physics, University of South Florida — 50nm epitaxial Fe_3O_4 thin films grown on MgO (100) substrates have been investigated by ferromagnetic resonance. The in-plane magnetic properties are greatly influenced by the magnetic field applied during film deposition, which (1) decreases the effective magnetization, (2) introduces the uniaxial anisotropy along the field direction, (3) rotates the in-plane easy axis from [001] to [011], (4) increases the homogeneity dramatically, (5) decreases the magnetic saturation field (lower than 2KOe). These behaviors associated with crystalline structure and strain, as well as variation with temperature, will be described in detail. This work is supported by US Dept. of Energy at MU and NSF at USF.

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