Surface and Cross-Sectional Views of Co-Cr Films Prepared by Facing-Targets Sputtering at High and Low Ar Gas Pressures

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Effects of an Ar gas pressure on cross sectional and surface views for Co-21at%Cr films by Facing-Targets Sputtering (FTS) system are observed by SEM. The FTS system can be operated at an Ar gas pressure as low as 0.15 mTorr. Compared with the film having a clear columnar structure, deposited at a high Ar gas pressure of 15 mTorr (Photo (b)), the film prepared at an extremely low Ar pressure of 0.15 mTorr exhibits a columnless and dense structure (Photo (a)). The columnless film shows higher perpendicular anisotropy than that of the columnar film because of its better crystallinity and higher c-axis orientation.

[Ref] Y.Niimura and M.Naoe, Symposia Proc. Materials Research Society, 58 (1986) 211.