

**INVESTIGATION OF COBALT FILMS  
MODIFIED BY FLUOROALKYLSILANES**

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In recent years cobalt thin films modified with organic thin films are of large interest because of their potential applications in a number of technological fields. We made the study of cobalt films 100 nm thick modified by 1H, 1H, 2H, 2H perfluorodecyltrichlorosilane (FDTS) films of various thickness. The cobalt films were thermally evaporated on naturally oxidized Si(100) substrates, and the FDTS films were grown on the cobalt surfaces by vapor phase deposition (VPD). The magnetic structure of the cobalt films modified with FDTS, revealed by magnetic force microscopy (MFM), was composed of maze stripe domains, characteristic of materials with sufficiently high perpendicular magnetic anisotropy. The domain pattern showed no directionality, i.e. the stripe domains ran in random directions in the film plane. Atomic force microscopy (AFM) imaging of the surfaces of FDTS films exhibited the presence of an agglomerate morphology. As the thickness of FDTS films was increased from about 2 nm to 30 nm, the domain width increased from typically 80–120 nm to 400–500 nm and the agglomerates varied in size from typically 30–70 nm to 150–300 nm. Note also that the cobalt films modified by FDTS had better tribological properties than the cobalt films modified by other alkylsilanes with fluorocarbon and methyl terminal groups.

9.7 cm

13.4 cm

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