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Structural and Magnetic Study of Magnetic MnAl Thin Films by Reactive Ion Beam Deposition WEI CHEN, U of Virginia, J.R. SKUZA, College of William & Mary, JIWEI LU, NAM DAO, U of Virginia, R.A. LUKASZEW, College of William & Mary, STUART WOLF, U of Virginia — The metastable magnetic τ phase of MnAl binary alloy with unique hard magnetic properties was discovered a long time ago followed by extensive investigation of its structure and magnetic properties but mainly on bulk samples instead of ultra thin films. Here we present a structural and magnetic study of τ phase MnAl thin films prepared by Reactive Biased Target Ion Beam Deposition. We found that the choice of substrate and the concomitant interfacial strain plays a very important role in determining the magnetic anisotropy of MnAl thin films. The effects of fabrication conditions and post-deposition annealing treatment on the film properties will be also discussed.

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