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 \( \tau \) 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 \( \tau \) 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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