

Abstract Submitted  
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**The layer-by-layer growth of ferromagnetic  $\tau$  phase MnAl thin films by Bias Target Ion Beam<sup>1</sup>** YISHEN CUI, WENJING YIN, JIWEI LU, STUART WOLF, Univ of Virginia — It is well known that the metastable  $\tau$  phase of MnAl has a L10 structure (chemical ordering along [001] directions) and is the only ferromagnetic phase of this binary intermetallic. In our study, alternating Al/Mn quasi-monolayer deposition was developed using a novel Bias Target Ion Beam deposition technique, that enabled precise control of the microstructural growth. We have obtained epitaxial  $\tau$  phase MnAl thin films ( $\sim 10$  nm thick) on single crystal MgO substrates with improved saturation magnetization and anisotropy in comparison with co-sputtered ultra thin films. We will discuss the microstructure and magnetic behaviors of MnAl films in detail.

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