

Abstract Submitted  
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**Self Exchange Bias and Bi-stable Magneto-Resistance States in Amorphous TbFeCo and TbSmFeCo Thin Films.**<sup>1</sup> CHUNG MA, XIAOPU LI, JIWEI LU, JOSEPH POON, Univ of Virginia, RYAN COMES, ARUN DEVARAJ, STEVEN SPURGEON, Pacific Northwest National Laboratory — Amorphous ferrimagnetic TbFeCo and TbSmFeCo thin films are found to exhibit strong perpendicular magnetic anisotropy. Self exchange bias effect and bi-stable magneto-resistance states are observed near compensation temperature by magnetic hysteresis loop, anomalous Hall effect and transverse magneto-resistance measurements. Atom probe tomography, scanning transmission electron microscopy, and energy dispersive spectroscopy mapping have revealed two nanoscale amorphous phases with different Tb concentration distributed within the amorphous films. The observed exchange anisotropy originates from the exchange interaction between the two nanoscale amorphous phases. Exchange bias effect is used for increasing stability in spin valves and magnetic tunneling junctions. This study opens up a new platform for using amorphous ferrimagnetic thin films that require no epitaxial growth in nanodevices..

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