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Magneto-Plastic Properties of Ion Beam Sputtered Thin Films on Nitinol Sheet Metal AMANDA GREGORY, WILHELMUS J. GEERTS, ANUP BANDYOPADHYAY, Texas State University-San Marcos — Thin magnetic films are used in a variety of applications, and over the course of their lifetimes will likely undergo some degree of plastic deformation. In order to study the ways in which this deformation affects the magnetic properties of thin films, we have deposited films of different thicknesses and compositions on a super-elastic Nitinol substrate and submitted them to varying percentages of strain. The samples were strained using an Instron 5566 materials tester, and a special sample holder was developed to measure the magnetic hysteresis by Vibrating Sample Magnetometer (VSM) in between straining cycles. Our experiments reveal that there is a small process window for which ion beam sputtered thin films do not detach from Nitinol substrates that have undergone up to 5% strain. The sample holder and the magneto-plastic properties of the robust magnetic thin film coatings will be discussed. Additionally, a short video of the straining experiments will be shown.

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