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**Magnetic Reversal in NiFe Gratings** JOEL DUNN, Texas State University - San Marcos, WILHELMUS GEERTS, GREGORY SPENCER, CLAUDE GARRETT, JETT HENDRIX — Well-characterized magnetic properties of NiFe films are important for the understanding of the magnetic reversal process and the optimization of the performance of the devices that rely on them (i.e. magnetic recording heads, position/angle sensors, etc.). Gratings were wet etched into NiFe films and were then characterized using Kerr Magnetometry, Profilometry, and Kerr Microscopy. The gratings consisted of 1-10  $\mu\text{m}$  wide strips with triangle or mesa shaped cross-sections. It was discovered that the domain in the center of the strips reversed at lower fields than the domains in the pitched sidewalls. The hysteresis curves of the gratings showed a two-stepped magnetic reversal process: a sharp reversal at low fields and a gradual reversal at higher fields. This resulted in “sleeves” in the hysteresis curve that were in contrast with the sharp domain reversal of the unpatterned/unetched film. It was concluded that the wet etching process had changed the magnetic properties of the film, possibly by selective etching of either the Fe or Ni in the alloy.

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