

Abstract Submitted  
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**Enhanced Electronic Density of States Observed in Fe-Cr Magnetic Multi-Layers**<sup>1</sup> DAVID W. COOKE, FRANCES HELLMAN, Physics Dept., University of California at Berkeley, MATTHEW CAREY, Hitachi Global Storage Technologies San Jose Research Center — Magnetic multi-layer structures have garnered much interest over the past two decades particularly because of the giant magnetoresistance (GMR) effect and its application to information storage technology. Iron-chromium multi-layer structures have been studied extensively, but there remain many questions in the field due to the complex behavior of the anti-ferromagnetic layer (Cr). Using our silicon micro-machined calorimeters, we examine the low temperature specific heat for a range of sputtered MML films grown under similar conditions to those used in industry. We have observed an enhanced electronic density of states in the Fe-Cr MMLs far beyond that of the iron or chromium individually. We compare this enhancement to the observed GMR behavior through a systematic study varying the thickness of the spacer layer.

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