

Abstract Submitted
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Deposited Energetic Fe Particles in Co Matrix¹ DANIEL MEYER, JIJI ANTONY, AMIT SHARMA, JOE NUTTING, YOU QIANG, University of Idaho, NANOPHYSICS AND NANOMATERIALS RESEARCH TEAM — Currently the highest observed net magnetic moment of bulk FeCo alloys is roughly $2.45\mu_B$. The application of deposited nano clusters to the problem of increasing net magnetization shows promise due to observations of novel magnetic properties exhibited by matter in the nano phase. It is known that the magnetic moment of isolated Fe clusters show a significant increase relative to the bulk value; however, as the particles are deposited, the surface cluster interaction reduces the net moment back to the bulk value. Theoretical studies indicate that by depositing the clusters within a matrix of atomic Co the free particle value can be retrieved. Using a gas aggregation cluster source, Fe particles of variable size will be energetically impacted upon a substrate at various impact angles and energies to affect the magnetic anisotropy. These Fe particles will then be layered between Co films. Using a SQUID to measure the magnetic properties of the resulting films it may be possible to observe increased magnetization.

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