

Abstract Submitted
for the MAR14 Meeting of
The American Physical Society

Superconducting Thin films with Periodic Ferromagnetic Nanostructures WONBAE BANG, K.D.D. RATHNAYAKA, I.F. LYUKSYUTOV, Department of Physics and Astronomy, Texas A&M University, College Station, Texas 77843, U.S.A., W. TEIZER, Dept of Physics and Astronomy, Texas A&M University, College Station and WPI-Advanced Institute for Materials Research, Tohoku University, Japan, D.G. NAUGLE, Department of Physics and Astronomy, Texas A&M University, College Station, Texas 77843, U.S.A. — Studies of the transport properties of superconducting Tin (Sn) thin films covered by periodic ferromagnetic nanostructures are reported. The Sn thin films and the periodic nanosized ferromagnetic configurations were patterned by electron-beam lithography and deposited by thermal quench condensation. A Germanium (Ge) layer was thermally evaporated at room temperature as an insulating barrier between the Sn thin films and the ferromagnetic structures. When a current was applied parallel to ferromagnetic stripes, the critical current and hysteresis exceeded the critical current perpendicular to the ferromagnetic stripes resulting in a strong anisotropy. We have observed that the critical currents show a matching field effect.

Wonbae Bang
Department of Physics and Astronomy, Texas A&M University

Date submitted: 13 Nov 2013

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