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Interlayer Magnetic Coupling in AlBeGaAs/GaMnAs/GaAs/GaMnAs Heterotructures, as Probed with Polarized Neutron Reflectometry BRIAN KIRBY, National Institute of Standards and Technology, MIKE FITZSIMMONS, Los Alamos National Laboratory, JULIE BORCHERS, National Institute of Standards and Technology, XINYU LIU, ZHIGUO GE, JACEK FURDYNA, University of Notre Dame
— Understanding interlayer exchange coupling between magnetic semiconductor layers could prove important for device applications. We discuss a series of AlBeGaAs/GaMnAs/GaAs/GaMnAs heterostructures, fabricated to be identical except for varying GaAs spacer layer thickness. Via hole doping, the AlBeGaAs layer alters the coercivity (Hc) and Curie temperature (Tc) for an adjacent GaMnAs layer. Therefore, in the absence of interlayer coupling, the GaMnAs layers in our heterostructures will not have equal Hc or Tc. Using polarized neutron reflectometry (PNR), we have measured the *depth-dependent* magnetizations for this series of samples, as functions of applied field and temperature. Our results show the effects of interlayer spacer thickness and temperature on coupling between GaMnAs layers.

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