

Abstract Submitted  
for the MAR10 Meeting of  
The American Physical Society

**Distinctly Different Switching Characteristics of Interface and Bulk Magnetization in Fe/AlGaAs(001) and Fe/MgO(001)** YICHUN FAN, HAIBIN ZHAO, GUNTER LUEPKE, AUBREY HANBICKI, CONNIE LI, BERRY JONKER — The interface magnetization processes of Fe/AlGaAs(001) and Fe/MgO(001) are investigated by magnetization induced second harmonic generation (MSHG). The interface switching characteristics of Fe/AlGaAs(001) are distinctly different from the bulk Fe film due to magnetization curling in nano-islands located at the interface. We estimate the thickness of Fe interface to be a few atomic layers thick and the interface exchange stiffness to be three orders of magnitude less than the bulk. In Fe/MgO(001) interface, the cubic magnetic anisotropy is dominant, but the interface magnetization exhibits an exchange bias which is absent in the bulk. The implications of these findings for spintronic applications will be discussed.

Yichun Fan

Date submitted: 20 Nov 2009

Electronic form version 1.4