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Domain-wall motion across geometrical nanoconstrictions in GaMnAs nanowire DONG-HYUN JANG, Seoul National University, SUNG UN CHO, YUN DANIEL PARK, YDP LAB TEAM — We report on the domain wall traversing across a GaMnAs nanowire with geometrical nanoconstrictions in series. The nanowire is patterned from 100 nm GaMnAs/GaAs(001) prepared by low-temperature molecular beam epitaxy (LT-MBE). From SQUID magnetization measurements as well as magnetotransport measurements, the magnetic ordering temperature is found to be 80 K. Series of nanoconstrictions, equally spaced (2 microns) and equally designed widths (< 40 nm), are patterned by e-beam lithography and realized by chemical etching processes. Electrical probes are e-beam patterned and are realized by Au/Ti e-beam evaporation and subsequent lift-off. By monitoring the resistance across the nanowire while sweeping the magnetic field along the wire axis, we observe change in resistance steps, which number corresponds to number of nanoconstrictions. Furthermore, we will discuss the resistance changes across each constriction to verify the domain wall movement across the nanowire.

Dong-Hyun Jang
Seoul National University

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