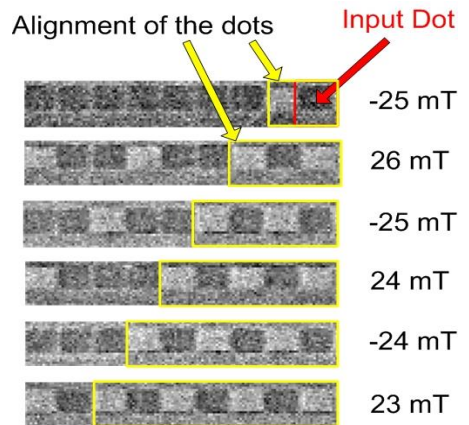


HSQ-based fabrication of a magnetic inverter chain in Co/Pt and Co/Ni multilayers

Abstract

Nanomagnetic logic with non-volatile magnets offers a wide application field which still has to be discovered. One of the first steps is the realization of an inverter chain where ferromagnetic dots align antiparallel by applied external pulses. In this way an information flow becomes possible. Within the work a new stable process for the fabrication of nanodots based on HSQ is presented. This fabrication process makes it possible to create a final interdot distance of only 50nm between neighboring dots. In addition the shape of the dots stays as defined in the mask. Furthermore this process is used to fabricate inverter chains in 8 and 10 Co/Pt and 8 Co/Ni multilayers. The results are compared and the influence of the different created dot sizes and cut sizes are displayed. The high coupling values of the Co/Ni specimen are the basis for the antiparallel alignment. All in all it can be displayed that one dot aligns which each pulse. This is shown by MFM pictures in the thesis.



Furthermore this process is used to fabricate inverter chains in 8 and 10 Co/Pt and 8 Co/Ni multilayers. The results are compared and the influence of the different created dot sizes and cut sizes are displayed. The high coupling values of the Co/Ni specimen are the basis for the antiparallel alignment. All in all it can be displayed that one dot aligns which each pulse. This is shown by MFM pictures in the thesis.

Number One Result

Fabrication of 50nm distances between field-coupled nanomagnets and controllable alignment of the inverter chain by clocking with external field pulses.

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