

EXCHANGE BIAS COUPLING IN IrMn/Cu/CoFe TRILAYERS DEPOSITED ON DIFFERENT BUFFERS

J. Wrona^a, T. Stobiecki^a, J. Kanak^a, G. Reiss^b

^a Department of Electronics, AGH University of Science and Technology,
Al. Mickiewicza 30, 30-059 Krakow, Poland

^b Faculty of Physics, University of Bielefeld, P. O. Box 100131, 33501 Bielefeld,
Germany

The exchange bias coupling between antiferromagnetic (AF) IrMn and ferromagnetic (F) CoFe through the different thickness of nonmagnetic spacer layer of Cu (S) has been investigated. The samples were deposited at room temperature by sputtering technique on thermally oxidized Si(100) wafers, on two different buffers: Cu(25nm) and Ta(5nm)/Cu(25nm). Samples with bottom (AF/S/F) and top (F/S/AF) configuration of AF layer, with reference to F layer, were investigated magnetically and structurally in as deposited and after field annealing. For all samples, exchange bias field decreases exponentially, with different decay length that depends on the system of buffer layers, as a function of Cu spacer thickness. The exchange bias field is four times higher for bottom than for top configuration, if the bottom configuration (IrMn/Cu/CoFe) is deposited onto Ta/Cu buffer. This fact can be attributed to the stronger texture of the IrMn layer, which is induced by the Ta/Cu buffer. In this work, influence of the two buffers on the texture of IrMn and exchange bias coupling will be discussed.

9.7 cm

13.4 cm

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Corresponding author :

J. Wrona

Address for correspondence :

Department of Electronics
AGH University of Science and Technology
Kraków 30-059
Poland

Email address :

wrona@agh.edu.pl