

Abstract Submitted
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Influence of the exchange bias on the magnetic losses in CoFeB/MgO/CoFeB tunnel junctions¹ RYAN STEARRETT, W.G. WANG, XIAOMING KOU, L.R. SHAH, J.Q. XIAO, E.R. NOWAK, University of Delaware — We report the influence of the exchange bias on the low-frequency magnetic losses of the reference layer in CoFeB/MgO/CoFeB tunnel junctions near maximum resistance susceptibility. The phase lag associated with the magnetic losses in the reference layer, ε , is field-dependent during its magnetic reversal, being largest around the antiparallel state and slowly decreasing with higher applied fields. Such behavior would indicate a direct influence of the exchange bias strength. Its strength is determined by the magnitude of the reference layer switching field, H_{ref} . This is defined as the field at which the magnetoresistance-sensitivity product exhibits its maximum. Devices with the strongest exchange bias tend to have the thickest seed layers and exhibit elevated values for H_{ref} and ε . However, ones with weakened exchange bias due to prolonged annealing show a reduction in H_{ref} and ε with increased annealing time. A comparison between top and bottom pinning configurations is also discussed along with its impact on double-barrier magnetic tunnel junctions.

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