Influence of the Deposition Temperature on Magnetotransport Properties of Ni-Fe/Au/Co/Au Multilayers

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9.7 cm

Multilayers composed of $[Ni_{80}Fe_{20}(2\text{ nm})/Au(2\text{ nm})/Co(0.8\text{ nm})/Au(2\text{ nm})]_N$, where N denotes the number of repetitions, have been prepared with magnetron sputtering at different deposition temperatures. In such multilayers Co layers may have the perpendicular anisotropy if its thickness ranges from 0.4 nm to 1.2 nm [1]. A correlation between the growth process and electrical properties of $[Ni_{80}Fe_{20}(2\text{ nm})/Au(2\text{ nm})/Co(0.8\text{ nm})/Au(2\text{ nm})]_N$ was investigated. The changes in giant magnetoresistance amplitude and shape have been correlated with the changes in Co layers growth process that occur in different temperatures, what was additionally confirmed by the Hall effect measurements. The time-dependent *in-situ* conductance measurements lead to the growth mechanism identification in high temperatures as intensified formation of Co islands.

[1] F. Stobiecki, B. Szymański, T. Luciński, J. Dubowik, M. Urbaniak, K. Roell, *J. Magn. Magn. Mater.* **282**, 32 (2004)

13.4 cm

Subject category :
5. Nano-structure, Surfaces, and Interfaces

Presentation mode :
poster

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