Multilayer microwires: tailoring magnetic behavior by sputtering and electroplating

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A novel technique for preparing multilayer microwires with controlled magnetic behavior has been developed. This technique involves combined sputtering and electroplating procedures to deposit metallic (magnetic or not) nano and micro-layers respectively onto glass-coated amorphous magnetic microwires. A suitable choice of magnetostrictive amorphous metallic nucleus together with the specific stresses induced by the deposited layers allows us the tailoring of specific magnetic behavior. In this way, multilayer microwires can be prepared characterized either by square-shaped hysteresis loops typical of magnetically bistable microwires with longitudinal easy axis or by nearly non-hysteretic loops for those microwires with a circumferential magnetization easy axes.