Large magnetostrictive susceptibility in Tb-FeCo/FeCo multilayers

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Abstract: $[Tb(Fe_{0.55}Co_{0.45})_{1.5}/Fe]_n$ and $[Tb(Fe_{0.55}Co_{0.45})_{1.5}/(Fe_{0.5}Co_{0.5}]_n$ multilayers were fabricated by rf-magnetron sputtering from composite targets. Magnetostriction was measured using an optical deflectometer. The as-deposited films showed a soft magnetic and magnetostrictive character, with a coercive field $?_0H_c$=5 mT and a parallel magnetostrictive susceptibility $??_{??}=d?_{par;}/d(?_0H) =1.4??10^{-2}$ T^{-1} . This magnetostrictive softness was strongly improved by heat treatments: the magnetostrictive susceptibility attains the huge value of $5??10^{-2}$ T^{-1} in applied field of 6 mT. The low-field dependence of the magnetostrictive susceptibility and their technical characters are described in detail. ?? 2001 American Institute of Physics.

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