

应用物理, 电子学

不同衬底温度下Tb/Fe/Dy纳米多层膜超磁致伸缩性能研究

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摘要 采用多靶磁控溅射仪在室温和衬底温度为300 °C的条件下制备Tb/Fe/Dy纳米多层膜, 研究其磁性能和超磁致伸缩性能. 结果表明该纳米多层膜较TbDyFe单层膜有更明显的垂直磁各向异性和更大的矫顽力. 尽管纳米多层膜样品具有垂直各向异性, 但仍具有超磁致伸缩性能. 特别是衬底温度为300 °C的纳米多层膜样品, 具有Laves相结构的TbDyFe纳米晶体析出, 使得低磁场下磁致伸缩性能有了显著的提高.

关键词 [Tb/Fe/Dy; 纳米多层膜; 超磁致伸缩效应; 垂直各向异性](#)

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Giant magnetostrictive effect in Tb/Fe/Dy nano-multilayer films under different deposition temperatures (Chinese)

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Abstract

Tb/Fe/Dy nano-multilayer films were deposited by multi-targets magnetron sputtering system at room temperature and substrate temperature of 300 °C. The nano-multilayer films have large perpendicular anisotropy and high coercive force than the TbDyFe single layer film, and show giant magnetostrictive effect though they have perpendicular anisotropy. The nano-multilayer film deposited by substrate temperature of 300 °C has enhanced low field giant magnetostrictive effect because the nano-crystalline of TbDyFe with Laves phase structure segregates from the amorphous matrix.

Key words [Tb/Fe/Dy; nano-multilayer films; giant magnetostrictive effect perpendicular anisotropy](#)

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