

Strain effect on magnetic properties in $\text{SrRu}_{0.9}\text{Fe}_{0.1}\text{O}_3$ thin films

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SRO have been used widely as electrodes in oxide heterostructures due to their good conductivity and good lattice match with most popular single-crystalline perovskite oxide substrates such as SrTiO_3 . Doping in polycrystalline SRO has been used to control magnetic properties such as T_c and magnetic coercive fields.

In this paper, epitaxial films of $\text{SrRu}_{0.9}\text{Fe}_{0.1}\text{O}_3$ have been grown by pulsed laser deposition onto both $\text{SrTiO}_3(001)$ and $\text{SrTiO}_3(110)$ substrates. It has been found that Fe-doped SRO can be stabilized by using epitaxial strain during film growth. We observed magnetic anisotropy and differences in T_c and saturated magnetic moment between $\text{SrRu}_{0.9}\text{Fe}_{0.1}\text{O}_3/\text{SrTiO}_3(001)$ film and $\text{SrRu}_{0.9}\text{Fe}_{0.1}\text{O}_3/\text{SrTiO}_3(110)$ film. The correlation between magnetic behavior differences with Ru-Ru nearest neighbor distance in different substrate direction will be discussed.