FIRST QUANTITATIVE TEXTURE ANALYSIS OF A $NdNiO_3$ THIN-FILM DEPOSITED ON Si-(100) SINGLE CRYSTAL

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Abstract

The X-ray quantitative texture analysis of a metal-insulator thin-film of the $NdNiO_3$ phase deposited on a (100) oriented silicon substrate was carried out. Several components of texture are observed. All texture components are found axially symmetric, without hetero-epitaxial like relationship, the axis of symmetry being the normal to the film plane. The three predominant quantified components are <001>, <110> and <100>, all other <hk0> fibre axes being present as minor components. The major component, <001>, exhibits a distribution density of 22 times the one of a perfectly random powder, for its {001} planes, with an overall texture strength of 11.6 m.r.d.^{2}. The volume ratios between the different components are calculated.

Keywords: Metal-Insulator, $NdNiO_3$, Texture