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Investigation of the aging of epitaxial LaNiO_{3-x} films by X-ray photoelectron spectroscopy

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Abstract

The X-ray photoelectron spectroscopy (XPS) was performed to study surface and volume composition, valence states and the concentration of hydroxyl groups in epitaxial LaNiO_{3-x} thin films after aging in air. The existence of at least few different forms of oxygen as lattice oxide, hydroxyl groups and adsorbed water in the samples is shown by XPS characterization. The lanthanum and nickel exist in oxide and hydroxide chemical states. The concentration of hydroxyl groups increases at the surface but it is distributed through the volume as well. It was found that the surface Ni/La concentration ratio is close to the stoichiometric bulk value.



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