

## **Improvement of the ferroelectric properties of ABO<sub>3</sub> (A = Pb, Ca, Ba; B = Ti, Zr) films**

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### **Abstract**

High-quality ABO<sub>3</sub>/LaNiO<sub>3</sub> (A = Pb, Ca, Ba; B = Ti, Zr) heterostructures have been grown on LaAlO<sub>3</sub> (100) substrate by the chemical solution deposition method and crystallized by a microwave oven technique. The structural, morphological and electric properties were characterized by means of X-ray diffraction (XRD), atomic force microscope images (AFM), and dielectric and ferroelectric measurements. XRD patterns revealed single-phase polycrystalline and oriented thin films whose feature depends on the composition of the films. The AFM surface morphologies showed a smooth and crack-free surface with the average grain size ranging from 116 to 300nm for both LaNiO<sub>3</sub> electrode and the ferroelectric films. Dielectric measurements on these samples revealed dielectric constants as high as 1800 at frequency of 100 Hz. Such results showed that the combination of the chemical solution method with the microwave process provides a promising technique to grow high quality thin films with good dielectric and ferroelectric properties.

*Keywords:* Films, chemical solution deposition method, ferroelectric properties, perovskites, BaTiO<sub>3</sub> and titanates.