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films on $NdScO_3$(110) substrates using pulsed laser deposition, X ray photoemission spectroscopy (to study the chemical composition), atomic force microscopy and X ray diffraction measurements (to access the films structure).
[1] A. H. G. Vlooswijk *et al.*, Appl. Phys. Lett. **91**, 112901 (2011).

P.128	**Transport mechanism in $CaCu_3Ti_4O_{12}$ films prepared by RF magnetron sputtering**

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There is a constant need in the modern electronic industry for capacitors with high capacity per volume in order to use in many applications such as memories devices, energy storage, microwave filters, among others. The synthesis, characterization and study of materials with a very high or giant dielectric constant are in particular important and have been studied by many investigators. The CCTO electrical behavior has been intensively discussed in the literature and has been attributed to intrinsic and extrinsic defects. The objective of this work was to deposit nanostructured thin films on different types of substrates by RF sputtering technique using CCTO targets prepared by mixed oxide method. Films morphology was characterized by Field Emission Scanning Microscopy (FE-SEM) and show homogeneous microstructure. The dependence of annealing atmosphere on the AC and DC transport measurements were analyzed and a mechanism that controls materials properties is proposed.

P.129	**Direct patterning of oxide interface with high mobility 2DEG without physical etching**

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Discovery of highly mobile two dimensional electron gas (2DEG) at the atomically engendered interface between two wide band-gap perovskite insulators, SrTiO3 (STO) and LaAlO3 (LAO) has opened up enormous possibilities of applications of oxide materials in cutting-age electronic devices like high mobility electron transistors (HMET). In spite of excellent interfacial transport properties manifested, challenges remained in structurizing these heterointerfaces without damaging the STO single crystal underneath in order to integrate them in circuit components. Top-down physical etching process was an unsuitable choice to serve the purpose since it induces substrate conductivity through creation of oxygen vacancy. In our presentation we will demonstrate development of a novel procedure for fabricating patterned functional interfaces based on epitaxial-lift-off technique. With its help devices incorporating patterned interfaces of LAO-STO was fabricated devoid of any physical etching process performed and temperature dependent magneto transport properties were investigated. The results demonstrated conservation of the high-quality interface properties in the patterned structures enabling future studies of low-dimensional confinement on high mobility interface conductivity as well as interface magnetism.