Post-doctoral position (18 months) in GEMaC laboratory - Versailles

Large surface Atomic Layer Deposition (ALD) of functional perovskite oxides: from growth, characterizations to properties

Context

Functional oxides are promising for the next generation of microelectronics and nano-devices that will require materials with new and dramatically improved properties, e.g. for information storage and data processing. Oxides exhibit an exceptionally broad range of versatile functionalities (insulator to superconductor, ferroelectric, magnetic…) controllable by external stimuli (electric/magnetic fields, light, stress…) arising from the complex interplay between charge, orbital, spin and lattice degrees of freedom. Consequently, the field of oxide electronics or "oxitronics" has grown exponentially over the last 10 years.

The main objective of AXION project (labex Nanosaclay flagship) is to endow the Paris-Saclay campus with a dedicated tool, namely ALD (atomic layer deposition) for the growth of large-area and high-quality oxide film on silicon wafers (2 inches). Challenge is to demonstrate our ability to growth epitaxial perovskite oxide with desired functional properties in order to design oxide-based devices within the AXION consortium expertise. Consortium gathers teams of Paris-Saclay campus working on such materials, as UMPhys CNRS-THALES, C2N-IEF, CentraleSupelec, CEA, LPS-Orsay, SOLEIL, and GEMaC.

Job description

You will be mainly involved in the ALD growth and characterization of perovskite oxides such as the multiferroic BiFeO3. With two research engineers, you will use newly purchased ANNEALSYS MC050 ALD/CVD equipment, develop the optimization of growth processes (ALD sequences, fast annealing,) in order to achieve epitaxy on SrTiO3 and/or Si substrates. You will characterize structural/chemical properties (XRD - XRR, AFM, …) with tools of GEMaC, and XPS in collaboration chemistry ILV-EPI team. You will integrate studies of advanced properties with consortium teams of AXION project

Required competences:

PhD in materials science, physics or chemistry, you have a strong experience in oxide thin films growth and chemical processes, ideally Atomic Layer Deposition (ALD). Background with structural characterizations such as X-ray diffraction will be appreciated. You must present skills and abilities in organizing your work, analyzing experimental data, and communicating your results. Fluent in spoken English or French, you should be able to write well-organized papers in English.

UVSQ post-doctoral contract

Location: GEMaC Laboratory, Université de Versailles St Quentin en Y. , Campus des Sciences, Versailles (www.gemac.uvsq.fr)

Starting date : October-November 2017 - Duration: 18 months

Net salary: around 2255 euros/month depending on experience

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