LMGP
Laboratoire des matériaux et du génie physique
une vision des matériaux

Grenoble INP

CNRS

Postdoctoral position at the LMGP Laboratory in Grenoble

LaMnO$_3$ thin films as Resistive Switching (RS) Memories:
Understanding, control and optimization of the RS properties

Job description:

A postdoctoral research position is offered within the framework of the project "ALTERNATIVE PEROVSKITE MATERIALS FOR RERAM MEMORIES: UNDERSTANDING AND TAILORING RESISTIVE SWITCHING" Alps Memories, funded by the French National Research Agency (ANR). The candidate will work at the Materials and Physical Engineering Laboratory (LMGP), in close collaboration with the Nanocharacterization Platform (PFNC) of CEA-Grenoble (Leti Institute).

The appointment has a fixed duration of 12 months, starting in **February 2017**.

You will be involved in an exciting project which will focus on the investigation of LaMnO3 thin films as Resistive Switching (RS) Memories. For understanding the fundamental mechanisms which underlie the RS, it is mandatory to determine the physico-chemical processes taking place and to relate structural, micro-structural and chemical parameters to the electrical performance. The LMGP houses state-of-the-art experimental equipment for investigating such properties: X-ray diffraction, atomic force microscopy, electron microscopy (SEM, TEM) and in-situ Raman spectroscopy. Besides, the PFNC has a strong expertise in photoemission spectroscopy (XPS) and microscopy (XPEEM), including synchrotron aspects (HAXPES), and complemented by Scanning Auger Microscopy (SAM), and conductive AFM (C-AFM).

You will be mainly focused on understanding how the structure, strain and chemistry of the film and the interfaces of LaMnO$_3$ devices influence the resistive switching range and behavior. You will perform standard and in operando XPS and SAM analyses, and participate to the synchrotron beamtime experiments.

Requirements:

- PhD degree in materials science, physics, chemistry or related field.
- A very good knowledge of English language, both spoken and written.
- Excellent communication and organisational skills.
- Creative, highly-motivated candidate. Interpersonal skills, dynamism, rigor and teamwork abilities.

Research profile & skills (required / highly desirable):

- Experience in characterisation of functional oxide thin films, including diffraction techniques (XRD, XRR, RSM), electron microscopy (SEM, EDX and TEM), Atomic Force Microscopy (AFM) and Raman spectroscopy
- Experience in the general area of memristive systems: clean room fabrication of memristor devices, current-voltage and pulsed electrical measurements, modelling of resistive switching devices
- Thorough knowledge of complimentary materials characterisation techniques such as X-ray photoelectron spectroscopy, impedance spectroscopy, conductive AFM and Kelvin probe force microscopy
- Experience in oxide thin film deposition (CVD, PLD or ALD)
- Computing and programming skills

Scientific environment:

The candidate will work within the LMGP, Materials and Physical Engineering Laboratory, in the FM2N group. Located in the heart of an exceptional scientific environment, the LMGP offers the applicant a rewarding place to work.
LMGP Web Site: http://www.lmgp.grenoble-inp.fr/. A part of the activity will be performed at the Platform for NanoCharacterization (PFNC) of CEA-Grenoble (Leti Institute). Both partners are located at Minatec Campus in Grenoble

<u>Salary:</u>

Pay scale of a fixed term post as a CNRS Researcher (depending on the candidate's experience) ~2380 €/month

<u>**Application procedure:**</u>

Please send motivation letter, CV and list of publications to:

Carmen Jiménez carmen.jimenez@grenoble-inp.fr ; Tel: 04 56 52 93 34

Closing date for applications: 31 January 2017