Postdoctoral position at the LMGP Laboratory in Grenoble

Electrodes and electrolytes for ultrathin Reversible Solid Oxide Cells

Role:

We are looking for a highly-motivated postdoctoral researcher to lead the research activity on the development and advanced characterization of electrochemical materials for their use in ultrathin Reversible Solid Oxide Cells. He/she will be part of the "SALD team" (https://sites.google.com/site/workdmr/) and will work under the supervision of Dr David Muñoz-Rojas and in close collaboration with the "Nanoionics team", led by Dr Mónica Burriel. He/she will work within the framework of the European FET Proactive project "Epistore" (https://cordis.europa.eu/project/id/101017709), which aim is to revolutionize the energy storage sector by developing pocket-sized kW-range stacks based on thin film reversible Solid Oxide Cells (TF-rSOCs). Within the "Epistore" project he/she will be a member a European network of partners, including research, technology centers and advanced industries from 7 different countries, who have joined their efforts with the goal of opening-up a new technology paradigm.

Research activities

The candidate will have two roles, a scientific one (90% of the time) and as project engineer (10% of the time, assisting to the administrative work of the Epistore project). Within this very exciting project, the post-doctoral researcher will focus on the investigation of oxide thin films for miniaturized and reversible fuel cells devices, which will be able to work as micro-fuel cells and micro-electrolysers.

He/she will be mainly focused on the tuning of the materials structural and functional properties using chemical deposition techniques (mainly SALD, but also CVD and ALD) and in the development of advanced functional characterization techniques. For understanding and optimizing the thin film properties, it is mandatory to relate the structural, micro-structural and chemical parameters of the oxide to the electrochemical performance at high temperatures. 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 will be routinely used and will be combined with electrochemical measurements. For this the postdoc will mainly in charge of the:

- Deposition, characterization and tuning of electrolyte and electrode materials
- Development and implementation of advanced *in situ* and *operando* characterization techniques
- Scaling and integration of the optimized thin films in reversible Micro Solid Oxide Cells
- Project management: organization of meetings, presentations and report writing

Requirements:

- PhD degree in materials science, physics, chemistry or related field.
- A very good knowledge of English language, both spoken and written.
- Excellent writing skills, ability to publish and promote your research
- Excellent communication, organisational skills and managerial ability for the project
- Proactive, creative, independent and highly-motivated candidate
- Interpersonal skills, problem-solving, initiative, rigor and teamwork abilities

Research profile & skills:

Required

- Knowledge in materials science, especially in Solid State Ionics and Electrochemistry and thin film deposition by chemical approaches
- Experience in characterisation of functional oxide thin films, including diffraction techniques (XRD, XRR, RSM), electron microscopy (SEM, EDX and TEM), Atomic Force Microscopy (AFM), X-ray photoelectron spectroscopy (XPS), Ellipsometry and Raman spectroscopy

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- Experience in electrical and electrochemical measurements (e.g. Van der Paw, impedance spectroscopy, electrical conductivity relaxation)
- Computing and programming skills (Python, Matlab and/or Labview)

Highly desirable

- Numerical simulation skills (e.g. COMSOL)
- Experience in Synchrotron characterizations techniques (eg. XAS, HAXPES, XRD)
- Experience in clean room microfabrication

Scientific environment:

The postdoctoral researcher will work within the **LMGP, Materials and Physical Engineering Laboratory** in Grenoble, in the Functional thin films and surface nano-engineering (FUNSURF) team. 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/

In addition, the postdoctoral researcher will have a strong interaction and will collaborate with the several groups within the European consortium, including the Catalonia Institute for Energy Research IREC (Spain), the Institute of Microelectronics of Barcelona IMB-CNM-CSIC (Spain) and Imperial College London (UK), among others.

Salary range:

Depending on experience, starting from 2617 € gross monthly

Application procedure:

Please send motivation letter, CV, list of publications and contact details of two referees to directly through the following link:

https://emploi.cnrs.fr/Offres/CDD/UMR5628-ANNDUC-005/Default.aspx?lang=EN

Closing date for applications: 31/07/2022

Starting date, asap from 1/10/2022, 13 months with the possibility to renew