

## Postdoctoral position – lecturer and researcher fixed term contract

**Main Work place:** IPREM, Université de Pau et des Pays de l'Adour, Pau, Nouvelle-Aquitaine, France

**Keywords:** Design of multicomponent materials, alloys, interfaces, surface analysis: XPS, Auger and ToF-SIMS.

**Occupation:** Research and teaching

### **Context**

The position is affiliated with the International Chair of Andrew Gellman, full Professor of Chemical Engineering at Carnegie Mellon University (PA, USA). This chair is a five year project funded by the E2S (Energy Environment Solutions) Initiative (<https://e2s-uppa.eu/en/index.html>). The international chair project is aimed at **developing multicomponent materials for Energy and Environmental technologies**. It is a close partnership between two academic laboratories, IPREM (Institute of Analytical Sciences and Physical Chemistry for the Environment and Materials - <https://iprem.univ-pau.fr/en/home.html>), and the College of Engineering (<https://engineering.cmu.edu/>) at Carnegie Mellon University (USA, Pittsburgh).

The main objective of the project is to implement a collaborative research program using high throughput methods to study, understand and develop multicomponent alloy materials for energy and environmental applications. These methods principally involve the use of Composition Spread Alloy Films (CSAFs) as high throughput alloy libraries, and a variety of spatially resolved analytical methods for mapping of the alloy characteristics (composition, phase, surface properties, etc.) and their functional properties (corrosion resistance, electrochemical response, etc.) across the composition space of the library. Instrumentation and methods developed at Carnegie Mellon University will be used to prepare thin alloy CSAFs with composition gradients lateral to their surfaces such that they contain all possible compositions of a ternary alloy; i.e.  $A_xB_yC_{1-x-y}$ , with  $x = 0 \rightarrow 1$  and  $y = 0 \rightarrow 1 - x$ . Surface analysis instrumentation at both Carnegie Mellon and at UPPA will be used to spatially map alloy characteristics across composition space and to map the composition dependence of alloy response to various environments, processing and other stimuli. It is expected that these measurements will provide an unprecedentedly high fidelity understanding of the influence of alloy composition on alloy properties. Data obtained through the course of this collaboration will be disseminated by publication in academic scientific journals and via presentation at national and international conferences.

### **Position and assignments**

The primary duty of the position holder is conduct of the research project and dissemination of project results. The postdoc will learn how to prepared CSAF libraries and to do so using equipment located at Carnegie Mellon University. He/she will conduct treatment and analysis of these CSAFs using methods such as XPS, Auger Spectroscopy, ToF-SIMS and others located at UPPA. The postdoc will be responsible for design of experiments, data collection, data analysis and interpretation. He/she will meet and communicate regularly with the project supervisors, prepare reports and write manuscripts documenting the studies performed in conduct of the project. The postdoc will be primarily located in France and working at the UPPA, however, there will be periodic opportunity to visit the labs at Carnegie Mellon in the US. The position may also include a co-supervision of PhD student.

### **The Postdoc position also include teaching duty at UPPA (64 h per year).**

-- 36 months (possibility of 24 additional months), available from September 2020

-- Gross salary: 2970 €/month

### **Profile request:**

The successful candidate will have the following skills, qualifications and expertise:

- A PhD in material sciences and/or physical-chemistry or equivalent subject.
- A strong experience in surface analysis techniques and/or material synthesis
- Autonomy, dynamism, creativity, good communication skills.

### **Selection process steps:**

- Establishment of the selection committee
- Solicitation of applications from qualified persons
- Evaluation of the applicants' CVs
- Interview with the selected candidates and ranking.

### **Application form:**

send an e-mail to the secretary and advisors with your candidature containing:

- copy of candidate's curriculum vitea
- cover letter detailing candidate's motivations and relevant experience
- Two letters of recommendation

**Application deadline: July 15<sup>th</sup>**

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