Grenoble INP - UGA is a renowned public institution of higher education and research, and a major player in the Grenoble ecosystem. It is the engineering and management institute of Grenoble Alpes University, and plays a leading role in the scientific and industrial community.

Researcher in metallurgy

<table>
<thead>
<tr>
<th>Job ad reference</th>
<th>2023-CHERCHMETALL-SIMAP</th>
</tr>
</thead>
<tbody>
<tr>
<td>Research field</td>
<td>Materials science</td>
</tr>
<tr>
<td>Host laboratory</td>
<td>SIMaP (UMR 5266 Grenoble-INP, UGA and CNRS) / Website : <a href="https://simap.grenoble-inp.fr/">https://simap.grenoble-inp.fr/</a></td>
</tr>
<tr>
<td>Requested profile</td>
<td>Recognised researcher (R2)</td>
</tr>
<tr>
<td>Location</td>
<td>Saint Martin d’Hères (Grenoble), France</td>
</tr>
<tr>
<td>Date of recruitment / contract term</td>
<td>02/01/2024 (18 months)</td>
</tr>
<tr>
<td>Contacts</td>
<td><a href="mailto:yannick.champion@simap.grenoble-inp.fr">yannick.champion@simap.grenoble-inp.fr</a></td>
</tr>
</tbody>
</table>

Grenoble INP - UGA is a leading public institution accredited with the French label “Initiative d’excellence”. It offers innovative engineering and management programs, with an increasing internationalization of its course offers. The courses are grounded in sound scientific knowledge and linked to digital, industrial, organizational, environmental and energy transitions. The Engineering and Management Institute of Grenoble Alpes brings together more than 1300 staff members (teacher-researchers, lecturers, administrative and technical staff) and 8300 students, located on 8 sites (Grenoble INP - Ense3, Grenoble INP - Ensimag, Grenoble INP - Esisar, Grenoble INP - Génie industriel GI, Grenoble INP - Pagora, Grenoble INP - Phelma, Polytech Grenoble, Grenoble IAE and the INP Prepa). Grenoble INP is also a highly-ranked institution of higher education and research, leading the way in the fields of engineering and management on an international scale. It is a member of a large number of international academic and research networks. It is part of the European University UNITE!.

As part of Grenoble Alpes University, Grenoble INP has associated guardianship of 39 national and international research laboratories and of technological platforms. The research conducted there benefits both its socio-economic partners and its students. Grenoble INP is at the heart of the following scientific fields: physics, energy, mechanics and materials; digital; micronanoelectronics, embedded systems; industry of the future, production systems, environment; management and business sciences.

Grenoble INP - UGA is an equal opportunity employer committed to sustainability. Grenoble INP-UGA celebrates diversity and equity and is committed to creating an inclusive environment for all employees. All qualified applications will be considered without discrimination of any kind.
This post-doc position is part of the inter-Carnot project S2AHE (Structuration de surface d'alliages à haute entropie: Surface structuring of high-entropy alloys) between the SIMaP laboratory (Carnot Energie du futur, Grenoble: https://www.energiesdufutur.eu/) and the Institut Jean Lamour (Carnot ICEEL, Nancy: https://carnot-iceel.fr/).

SIMaP is a leading laboratory in metallurgy, materials science and processing with staff of about 200 (60 academics and CNRS, 40 technical, 100 doctoral, post-doctoral, trainees). The laboratory brings together material physicists and chemists doing experimental, theoretical and modeling researches on three main themes: process engineering, materials design and materials sustainability. The laboratory is organized into 4 research groups where experiments are carried out on high standard equipments, TEM, SEM, atom probe tomography, synchrotron (at ESRF) and neutrons (at ILL), in situ characterization (temperature, field, stress) and the coupling of property measurements (mechanical-electrical-chemical).

Job description:

High-entropy alloys (HEAs) are multi-elemental metallic compounds (composed of at least 5 elements) discovered in 2004. In addition to their chemical complexity, these compounds exhibit crystal lattice distortions (low local deviation from lattice periodicity). These two characteristics form the basis of a new concept of metallic alloys whose flexibility of chemical composition enables different properties to be modulated. Initially, HEAs were studied for their mechanical properties, but their main advantages are now being applied to a wide range of energy-related properties: hydrogen storage, catalysis, water decomposition, etc. Although the literature on HEA is abundant, no publication reports on laser structuring of the surface of such materials. Yet this type of treatment can bring new optical, tribological, mechanical or biochemical functionalities to many materials.

The aim of the project is to study HEA thin films, to structure them using ultra-short laser pulses and determine their functional properties. The films are produced by physical vapor deposition at the Institut Jean Lamour and then structured by laser. The aim of the post-doc is to study the effect of surface structuring by mechanical characterization using nano-indentation (at SIMaP), to analyze the microstructure and composition at fine scales using transmission electron microscopy (at SIMaP and IJL) and atom probe tomography (at SIMaP). The Post-Doc's assignment is SIMaP Grenoble, with missions at the IJL Nancy for experiments and discussions.

Specific requirements or conditions

Research Experience in experimental materials science, metallurgy, characterization.

Specifics of the position

The research may be lead at SIMaP, campus St Martin-d'Hères with visiting period at Institut Jean Lamour, Nancy.

Position assigned to a restricted area: NO

(Device for the protection of the scientific and technical potential of the nation, conditioning the appointment of the researcher to the authorization of the Defense Security Officer).

How to apply

Applications must be sent to: yannick.champion@simap.grenoble-inp.fr

Application deadline: 17/10/2023