Institute of Engineering and Management of Grenoble Alpes University

HR EXCELLENCE IN RESEARCH

Grenoble INP - UGA is a member of **international** engineering and management education and research **networks.** It is widely recognized in national and international rankings**.**

8 schools + **39** laboratories

8 300 students

1 300 teaching, research, administrative and technical staff

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.

University lecturer Position

Short profile	Implementation of experiments with molten salt or liquid metal heat carriers for the development of new energy systems
Body	University lecturer
Position number	28-62 MCF 0647
CNU Section	28-62
Location	Grenoble
Date of recruitment	01/09/2023
Key words	molten salt heat carriers, liquid metal heat carriers, thermal hydraulics, corrosion and materials, new nuclear power, concentrated solar power, thermal storage, multi-physics, energy

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 s 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.

Teaching

School : Grenoble INP - Phelma

School website: https://phelma.grenoble-inp.fr/

Contacts : patrice.petitclair@phelma.grenoble-inp.fr

Grenoble INP Phelma is an engineering school within the Grenoble Institute of Technology. It offers its students a wide range of courses at the cutting edge of scientific and technological progress: micro and nanotechnology, instrumentation, energy, innovative materials, information technology, biomedical engineering, process engineering, and environmental engineering. Phelma provides learning to than 1,400 students in 11 engineering programs, one of which is an apprenticeship program, and a dozen master's programs. The teaching staff is made up of about 100 full professors and over 300 part-time lecturers. The administrative and technical team consists of about fifty employees. The school operates on two sites, the Minatec site in Grenoble and the university campus in Saint-Martin d'Hères. Phelma's three main pillars - physics, electronics, and materials - are firmly anchored in the school's mission. The school's engineering and master's programs are evolving to keep pace with the changing needs of the industry, especially in the areas of energy and digital transition.

Teaching Profile:

This position of lecturer is intended to provide teaching in the fields of GEN (Energetic and Nuclear Engineering), MANUEN (Materials for Nuclear Energy) and EPEE (Electrochemistry and Processes for Energy and the Environment) in materials chemistry and corrosion, thermal-hydraulics, energy and process engineering (CNU Sections 28 and 62) in connection with nuclear reactors and other energy systems such as concentrated solar power and thermal storage. The successful candidate is expected to teach courses in materials, corrosion and electrochemistry related to energy, fluid mechanics, heat transfer and the energy systems mentioned. The candidate should have good experimental and numerical simulation skills in order to develop and supervise practical work in the FEST (Fluids Experiments and Simulations in Temperature) experimental unit of the LPSC (Laboratory of Subatomic Physics and Cosmology). This project will include experiments on energy storage, transport and conversion using molten salts and water as heat transfer media. These experiments will allow students to acquire skills on new technologies (new nuclear, concentrated solar, heat pipes and thermoelectric converters) developed to meet the challenges of the energy and ecological transition. English proficiency is required to teach in the courses in question.

Research

Team : LPSC, PAGE pole

Laboratory website: http://lpsc.in2p3.fr/index.php/fr/

Contacts: Laurent Derome (derome@lpsc.in2p3.fr)

The Laboratory of Subatomic Physics and Cosmology of Grenoble (LPSC) is a joint research unit (UMR 5821). Its supervisors are the Institute of Nuclear Physics and Particle Physics (IN2P3) of the CNRS, the University of Grenoble

Alpes (UGA) and Grenoble INP - UGA. The laboratory is composed of about 220 people, including 70 researchers and teacher-researchers, 100 engineers, technicians and administrative staff, about 30 PhD students and about 20 people on fixed-term contracts and postdoctoral researchers.

Its missions cover research in the field of particle physics and cosmology and in relation to several societal issues (nuclear energy, medical applications), participation in university teaching, training through research, and actions for the promotion and dissemination of scientific knowledge. Three teams of LPSC researchers are currently working on research topics related to the design and modeling of current and future nuclear reactors, the fuel cycle, energy scenarios, nuclear data measurements for reactors, and medical applications of nuclear physics.

Research Profile:

This profile falls within the framework of the development of experimental facilities related to European projects involving liquid heat carriers, molten salts or liquid metals. The application fields underlying the context of these developments concern Generation IV nuclear reactors, neutron production targets and more generally systems for the transfer, exchange and storage of energy at high temperature. Significant work is needed to design original experimental devices adapted to meet the objectives of this project (e.g. validation of multiphysics numerical models, proof of principle and/or process studies). Their construction and operation is a team work which covers very varied aspects:

- Numerical modeling of thermal-hydraulic (Computational Fluid Dynamics type) and mechanical experiments
- Definition of the processes to be implemented
- Participation in the mechanical design and assembly of the experiment
- Realization of the experimental campaigns, management of the fluids and the instrumentation
- Exploitation of data and comparison with numerical models

The candidate, who is expected to be team-oriented and open-minded so as to organize interdisciplinary collaborations, will be in charge of the "materials, chemistry and corrosion" component of the FEST platform. An important part of the work is carried out in the framework of European (Samosafer) or national (PIA-ISAC project starting in September 2022) projects. He/she will have experience in metallic materials and fluid media (thermodynamics of liquids and gases at high temperature). He/she will have to participate in the decisions concerning the choice of studies (feasibility), the design of the devices and the conditions to be implemented to manage the good functioning and the possible evolutions of the deployed systems (corrosion, mechanical properties, phase change ...). He/she will be responsible for carrying out experiments as well as microstructural or chemical characterizations to be carried out in collaboration with other laboratories or as a subcontractor. Knowledge of nuclear systems and CFD (Computational Fluid Dynamics) is a definite asset.

Position assigned to a restricted area: YES, in the near future

(Device for the protection of the nation's scientific and technical potential, which is a prerequisite for the appointment of the lecturer-researcher to the authorization of the Defense Security Officer).

Specific requirements or conditions

The candidate will be required to perform work with a controlled atmosphere glove box (water, oxygen) for some steps in the handling of material and some experiments.

The candidate must be fluent in both French and English. The candidate must be able to teach in English, as some of the school's courses are given exclusively in English. In addition, the many different interactions involved in collaborations and subcontracts require a good command of French.

Administrative activities

In the medium term, the candidate recruited will have to take on some responsibilities such as the coordination of Teaching Units or the management of Practical Work Platforms.

Specifics of the position

The courses may be given on the school’s 2 locations: Grenoble and St Martin-d'Hères.

How to apply

Applicants must submit their applications on the Galaxie Platform of the French Ministry of Higher Education and Research from 23rd of February 2023, 10 a.m. (Paris time) to 30th of March 2023, 4 p.m. (Paris time), deadline.

Any document sent outside the Galaxie procedure will not be taken into account.

The interview will include simulation/situational exercises. The details will be communicated when the invitation is sent out. In addition, part of the interview may be conducted in English.