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

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| **Short profile** | Process engineering for paper processes |
| **Body** | University lecturer |
| **Position number** | 62 MCF 0323 |
| **CNU Section** | 62 |
| **Location** | Grenoble |
| **Date of recruitment** | 01/09/2023 |
| **Key words** | Process engineering, Energetics, Grinding/Fragmentation, Mixing, Liquid/solid or gas/liquid separation, Heat transfer, Mass transfer, Process modeling and simulation |

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 - Pagora

**School website** : http://pagora.grenoble-inp.fr/

**Contacts** : agnes.boyer@grenoble-inp.fr ; evelyne.mauret@grenoble-inp.fr

Grenoble INP-Pagora is the only French public school offering engineering education for the industries of plant fibers, paper and cardboard, printed communication, packaging and biomaterials. Its ambition is to become an international reference in these fields. Pagora addresses current societal concerns that aim to develop renewable, biobased and recyclable solutions to replace many of our everyday products, such as single-use plastics. Pagora, in close collaboration with its research laboratory, LGP2, has constantly innovated and anticipated the expectations of its partners. It thus offers a training program that is as close as possible to the new needs in biobased materials, biofuels and surface functionalization (printed electronics). Grenoble INP-Pagora offers three-year training programs (initial training and apprenticeships) for students who will be working in senior technical and management positions in these fields, including abroad. The program also leads to a Master's degree in Biomaterials/Biorefinery (part of the Master's program in Materials Science and Engineering).

**Teaching profile:** The core of the teaching of this position is related to paper process engineering. This position has been created as a result of a retiring professor who has shared part of his teaching with the existing teaching team. The teaching that will be entrusted to the newly appointed lecturer will be related to process engineering and will focus on the optimization and simulation of processes for material and energy savings, in a context of sustainable development. The courses will be given as part of the training of engineers at Grenoble INP-Pagora, in the "Fiber and Biomaterials Engineering" option. The courses aim at enhancing our training on aspects related to circular economy and energy saving, which meet the needs of our industries and the expectations of our society.

The courses in question are the following, in order of priority:

- Process engineering applied to paper processes: from the suspension of fibers to the finalmaterial (paper, cardboard, tissue and non-woven paper)

- Modeling and simulation of processes for their optimization (material, energy, effluents)

- Energy in pulp and paper processes: energy recovery and production, energy optimization

The successful candidate will have a particular interest in practical teaching and the implementation of projects. Knowledge of process modeling and simulation will be highly appreciated. The person recruited will also be able to take part in engineering science courses (lectures or workshops) depending on his/her skills and the needs of the training. He/she will supervise apprentices, internships, end-of-studies projects and will be in regular contact with the industrial world. He/she is expected to show interest in active pedagogy and incorporate the competencies approach deployed at Pagora. He/she will participate in juries and other meetings of the teaching staff.

# Research

**Team : LGP2 (UMR 5518 Grenoble-INP, UGA and CNRS) - BioChip team**

**Laboratory website : https://lgp2.grenoble-inp.fr**

**Contacts : anne.blayo@grenoble-inp.fr ; nathalie.marlin@grenoble-inp.fr**

The Laboratory of Process Engineering for Biorefinery, Biobased Materials and Functional Printing (LGP2) is a Joint Research Unit, UMR CNRS 5518, created in 1995 and whose supervisory bodies and partners are the UGA, Grenoble INP, CNRS and Agefpi (association law 1901). The staff of the unit (~ 75 persons) includes 23 permanent researchers, 21 support staff (9 FTE), about thirty PhD and post-doctoral students. LGP2 is composed of 3 research teams (BioChip/MatBio/FunPrint). The research conducted at LGP2 focuses on the transformation and valorization of plant biomass, and in particular on the biorefinery integrated into paper processes. The position will be assigned to the BioChip team (Biorefinery, Chemistry and Ecoprocesses) which aims to develop research in the field of fractionation, characterization and valorization of lignocellulosic biomass to produce biobased materials and biofuels by meeting societal and industrial expectations. The work is part of the study of energy and raw material saving processes and implementing a green chemistry. The recycling of lignocellulosic biomass and paper/cardboard is also a key theme of the team as well as the unitary operations of paper and cardboard manufacturing. These themes are in line with the axes of the LabEx Tec 21 as well as those of the Carnot Institute PolyNat.

**Research profile:**

The research axes to be developed by the successful candidate are in line with the development and optimization of processes with a strong objective of reducing raw material and energy consumption. The research will therefore be focused on the following themes:

- Paper process engineering: understanding and physical analysis of the elementary operations in the manufacture of paper and cardboard. The elementary operations targeted are:

  - o Suspension of vegetable fibers: fragmentation, mixing and treatment of fragmented solids
  - o Cleaning/deaeration of fibrous suspensions: liquid/solid or gas/liquid separation (hydrocyclones...)
  - o Optimization of the quality of fibrous suspensions: mechanical treatments of fibers (refining), chemical treatments, enzymatic or couplings
  - o Distribution of fibrous suspensions: fluid mechanics, rheology, pressure injection
  - o Sheet formation: filtration and pressing
  - o Sheet drying: heat transfer (convection, conduction, radiation), mass transfer and energy recovery

- Process modeling and simulation: towards eco-efficiency of processes - knowledge and semi-empirical models
- Optimization [water/material/energy] and reduction of $CO_2$ emissions

This research must include innovative aspects related to the development of processes specific to the biorefinery integrated with pulp mills. It may also take into account new issues such as the energy optimization of cellulose

microfibril (MFC) production processes and the consequences of the increasing use of MFC on paper production processes.

**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 lecturer-researcher to the authorization of the Defense Security Officer).

## Specific requirements or conditions

Administrative duties in connection with the position of lecturer: the lecturer will be in charge of educational program.

Within the framework of research, excellence and international development, the quality of the candidates' research activities of the candidates has to be evidenced by recent publications in the best international journals or conferences in their field.

## How to apply

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