



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

8300 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.

## Researcher in Materials Science

Job reference number	
Research field	Additive manufacturing of hard materials by extrusion 3D printing
Host laboratory	SIMaP (UMR 5266 Grenoble-INP, UGA and CNRS) / Website : <a href="https://simap.grenoble-inp.fr/">https://simap.grenoble-inp.fr/</a>
Researcher profile	First stage researcher - doctorate (R1)
Location	Grenoble, France
Date of recruitment / contract length	01/02/2025 (36 months)
Contacts	<a href="mailto:celine.pascal@grenoble-inp.fr">celine.pascal@grenoble-inp.fr</a> / <a href="mailto:jean-michel.missiaen@grenoble-inp.fr">jean-michel.missiaen@grenoble-inp.fr</a>

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.

# Research

The AIM-NEXT project ([www.aimnext.eu](http://www.aimnext.eu)), funded by the DN-Marie Skłodowska-Curie Actions call of the European Commission, arises from the common need of European academy and industry to educate and train the next generation of experts in the field of Accelerate the sustainable design and Insertion of hard Materials tools and components, manufactured using non-critical raw materials, for Next generation EXTreme applications. To address this need, a unique training and research programme has been developed involving a selection of some of the best European Universities in the field together with Worldwide leading Industrial Organisations covering fundamental elements of the product value chain in key industrial sectors: mining, manufacturing and construction engineering. By participating in the AIM-NEXT project, the 10 Doctoral Candidates will receive: (1) top level interdisciplinary training through a defined scheme where each fellow is exposed to all three technical environments; (2) intersectorial training articulated through a wide variety of strategic research themes and the different application areas represented in the consortium; and (3) international training through a portfolio of mandatory network-wide training events and secondments at academic and industrial partners.

One of these PhD positions is proposed at the Science and Engineering of Materials and Processes laboratory. SIMaP is located on the East campus of Grenoble, in Saint Martin d'Hères. Created in 2007, it is a joint research unit of CNRS, Grenoble INP - UGA and UGA. The laboratory brings together physicists, mechanics, and chemists working on objectives related to the design and development of materials and processes. The three main themes are: processes development, microstructure-architecture-property relationships and durability of materials. Research is carried out in an experimental framework covering elaboration, processes and characterization, as well as in a theoretical framework with simulations and modeling, covering almost all space and time scales.

## Objectives:

The main objective of this project is to explore the potentiality of extrusion 3D printing of hard materials using Metal Injection Molding (MIM) feedstocks.

- A first goal will be to optimize printing parameters and to identify and understand the formation of defects during printing and their possible healing during the debinding and sintering steps in order to obtain dense final parts with optimized microstructure.
- A second goal will be to design customized parts and to determine the limitations in terms of size and shape of the parts for the different steps of printing/debinding/sintering.

## Expected results:

- Development of complex-shape components with high density and controlled microstructure for standard WC-Co compositions.
- Adaptation of the process to innovative hard materials grades.

**More information:** <https://www.aimnext.eu>

## Specific requirements or conditions

### Eligibility Criteria:

To be eligible for recruitment, applicant must comply with the following requirements:

- Comply with the mobility rule. At the time of recruitment, the candidates must not have resided or carried out their main activity (work, studies, etc.) in the country of the recruiting beneficiary for more than 12 months in the 3 years immediately before the recruitment date. Short stays, such as holidays, are not considered.
- Fulfil the requirements to be able to enroll in a doctoral programme at the hosting institution/country.
- No PhD awarded. Applicants are not eligible if they have already been awarded a PhD
- Selected candidate must be willing to spend a prolonged time in another institute/country of the network during the PhD thesis period.

Qualifications: Master degree or equivalent in Materials Science, or any related subject. Proficiency in English is required.

Skills: The candidate should have a sound knowledge in materials science and engineering, should be comfortable with processing and characterization techniques (dilatometry, additive manufacturing, XRD, SEM, ...), should have dissemination and transferable skills necessary for the divulgation of the research results (good communication skills, oral and written), ability to work in a multidisciplinary and international team, capacity to follow courses and

workshops on scientific and complementary soft skills, readiness for international mobility and synergies with other research groups.

Experiences: The candidate should have conducted experimental work in the framework of her/his bachelor and/or master degrees. A previous experience in Powder Metallurgy would be appreciated.

### **Specifics of the position**

The main host laboratory is located in Grenoble. In the frame of Marie Skłodowska-Curie Actions (MSCA), secondments are planned at Seco Tools AB (Seco, Sweden) and Universidad Carlos III de Madrid (UC3M, Spain). The MSCA-DN programme offers a highly competitive and attractive salary and working conditions. The successful candidates will receive a salary in accordance with the MSCA regulations for early stage researchers.

Exact salary will be confirmed upon offer and will be based on:

- Living Allowance of € 3400/month to be paid in currency of country where based and with a correction factor to be applied per country.
- Mobility allowance of € 600/month to be paid to all DCs recruited.
- Additionally, researchers may also qualify for a family allowance of € 660/month depending on family situation.

Taxation and Social Contribution deductions based on National and Institutional regulations will apply and will be deducted from the gross payment highlighted above.

**Position assigned to a restricted area: NO**

## **How to apply**

Centralised publication of thesis offers in the frame of the project AIM-NEXT

<https://euraxess.ec.europa.eu/jobs/290129>