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FCT-Tenure | 1st Edition	Status	Closes in
2023.11076.TENURE.033	**Grant**	**01.03.2024 17h00 GMT**

Positions

Assistant Professor in Metallic materials: Processing, degradation and characterization, Chair CENIMAT|i3N

Research unit/Associate laboratory chair

Job category

Assistant professor

Hiring Institution

Universidade Nova de Lisboa

Additional host institution

Universidade Nova de Lisboa - Faculdade de Ciências e Tecnologia da Universidade Nova de Lisboa
Instituto de Nanoestruturas, Nanomodelação e Nanofabricação

Call's publication date

July 2025

Scientific domain

Engineering and Technology Sciences

Scientific area

Materials Engineering

Scientific sub-area

Materials Engineering - Other

Other scientific area name

Metallic materials

Field(s) description

Materials Sciences with emphasis Metallic materials: Processing, degradation and characterization

Position's alignment with SDGs of the United Nations 2030 Agenda

SDG Goal 4: Quality Education
SDG Goal 9: Industry, Innovation and Infraestructures

Research unit/Associate laboratory chair

Name of the Host Research Unit/Associate Laboratory

Instituto de Nanoestruturas, Nanomodelação e Nanofabricação

Commitment Declaration

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Obtained on 29-02-2024 at 12:26:00

Does it involve co-funding?

0%

Job description, scientific profile and rationale

Position: Assistant Professor in Materials Science with emphasis on processing, degradation and characterization of metallic materials:

Job Description: We are seeking a highly qualified and motivated Assistant Professor in the field of Materials Science with emphasis in Metallic Materials (Metallurgy), specifically within the realm of advanced processing, degradation and characterization of metallic materials. The successful candidate will play a pivotal role in advancing our institution's research and academic mission. Key responsibilities include:

1. Establish and lead an independent research program addressing key questions in Metallurgy, with an emphasis on micro- and nano-structural modifications, corrosion mechanisms and surface protection.
2. Design and teach undergraduate and graduate courses in Metallurgy, with a focus on applications in physical metallurgy, thermomechanical processing, and corrosion engineering.
3. Supervise graduate students and mentor undergraduate researchers in research projects related to metallic materials processing.
4. Contribute to the academic community through the publication of research findings in reputable scientific journals.
5. Collaborate with interdisciplinary research teams within the institution and foster external collaborations.

Scientific Profile: The ideal candidate will possess the following qualifications and attributes:

1. Ph.D. in Materials Engineering, Metallurgy, or a related field, with a strong focus on Metallurgical Technologies.
2. Proven expertise in designing and conducting research projects related to metallic materials processing and characterization, with a clear application to Materials Engineering.
3. Experience in both mentoring students and providing advanced training, as well as teaching undergraduate and graduate courses in Materials Science and Engineering, with a commitment to innovative and effective pedagogical approaches.
4. Demonstrated ability to secure external research funding and a strong publication record in reputable scientific journals.
5. Strong leadership and communication skills, with the ability to collaborate effectively within interdisciplinary teams.

Rationale: The recruitment of an Assistant Professor in Materials Science with emphasis in Metallic Materials: Processing, Degradation and Characterization aligns with our institution's strategic goals in advancing research and education in materials science and engineering. The emphasis on metallic materials addresses the growing demand for advancements in applications requiring new or improved metallic alloys. Examples include functional alloys and high stability (thermal, mechanical and /or chemical) alloys, such as shape memory alloys (SMAs) and high entropy alloys (HEAs). Optimizing its properties using by thermo-mechanical treatments levareged on thermodynamic modelling and artificial intelligence approches could improve and extend its use in a wide range of structural and functional applications. The successful candidate will focus on advanced metallic materials processing addressing industry, innovation, and infrastructure challenges (SD9). The high expertise ensures top-level education (SD4) and contributes to scientific knowledge and innovative solutions, enhancing our institution's reputation for research and education excellence. This position reflects our commitment to staying at the forefront of scientific discovery and making meaningful contributions to the field of materials science and engineering.

Benefits and resources offered to the selected candidate

A wide range of benefits and resources will be made available to attract and support top-tier talent to FCT NOVA / DCM.

1.Competitive Salary Package:

The selected candidate will receive a competitive salary, reflective of their qualifications, expertise, and experience, to pursue academic excellence.

2.Research Funding and World-Class Laboratory Facilities:

DCM professors benefit from CENIMAT state-of-the art laboratory facilities tailored to Sustainable Functional Advanced Materials and its generous funding (35 M€ of competitive funds, 2018-2023) to support their research endeavors.

3.Collaborative Research Environment:

DCM and CENIMAT set the stage for friendly and fruitful collaborative work, with 120+ researchers devoted to sustainable materials, including several ERC grantees. FCT NOVA also has 12 other departments eager for collaborative interdisciplinary work to enhance academic outcomes.

4.Teaching and mentorship support

Pedagogical training, advanced teaching technologies, and mentorship programs support the candidate's teaching activities, aiming to enhance their effectiveness in conveying knowledge and fostering the academic development of students.

5.Health and Wellness:

Comprehensive health and wellness benefits will be provided. Our institution is committed to supporting a healthy work-life balance.

6.Professional Development:

Workshops and training programs are available to help our professors to stay at the forefront of advancements in physical properties of materials and memory applications.

7.Career Advancement Support:

Mentorship programs and leadership training are available, as well as opportunities for academic advancement to aid the candidates’ progression in their academic career.

8.Institutional Networking:

DCM professors are connected to a broad network of international collaborators, facilitating the exchange of ideas, and fostering collaborations. Examples are the links through EIT Raw Materials and Eutopia.

Context, expected impact, and relevance of the scientific profile

In the pursuit of excellence in Materials Science, particularly in the specialized domain of Metallurgy with a focus on Advanced Processing, Characterization and Degradation of metallic materials, the Assistant Professor position stands as a pivotal element in shaping the scientific landscape of [**NOVA FCT/DCM|Cenimat-i3N**]. This role is strategically aligned with the scientific strategies outlined in Part A and is poised to make a substantial impact across various dimensions:

i. The Hiring Institution: The incumbent's scientific profile is intricately woven into the fabric of [**NOVA FCT**], complementing and fortifying the institution's commitment to cutting-edge research and academic brilliance. The context of this position within the institution is crucial to advancing scientific frontiers and fostering an environment conducive to breakthroughs in Materials Science and Engineering.

ii. The Research Unit and/or Associate Laboratory: Within the Research Unit and/or Associate Laboratory, the Assistant Professor's expertise in Processing, Characterization and Degradation of metallic materials will catalyze collaborative research initiatives. The synergies between the incumbent's profile and the unit's objectives are poised to enhance the scientific output, fostering an atmosphere of innovation and interdisciplinary collaboration.

iii. The Faculty or Department: Situated within the [**NOVA FCT/DCM**], this position significantly contributes to the faculty's academic prowess. The scientific profile aligns with the faculty's goals, strengthening its position as a hub for excellence in Materials Science. The emphasis on Processing, Characterization and Degradation of metallic materials aligns with the faculty's commitment to staying at the forefront of scientific advancements.

iv. Relation with Other Positions: The Assistant Professor's role is intricately linked to other positions proposed in this FCT-tenure application especially the Assistant Professor in Processing and Characterization of Ceramic and Glass Materials. The collaborative dynamics and complementary expertise across these positions are designed to create a holistic and impactful scientific ecosystem, amplifying the overall effectiveness of the initiative.

In recognition of the significance of attracting top-tier talent, a comprehensive package of benefits and resources has been tailored specifically for this position. This strategic investment is geared towards ensuring the candidate's success and satisfaction, fostering an environment where scientific excellence thrives in tandem with individual professional growth.

Institutions information

Hiring institution

Universidade Nova de Lisboa

Profile of the research staff of the hiring institution

Description	Number
Total number of integrated PhD holders, with a fulltime permanent contract as a researcher (ECIC or equivalent), associated with the Institution on 30/11/2023	16
Total number of integrated PhD holders, with a fulltime permanent contract as a professor (ECDU, ECPDESP or equivalent), associated with the Institution on 30/11/2023	420
Total number of PhD holders, with non-permanent fulltime research contracts (“Norma Transitória”, non-permanent “FCT-CEEC”, “Bolsas inv. pós-doutoral”, etc.) associated with the Institution on 30/11/2023	114

Scientific, hiring plan and hosting conditions

Description of the Hiring Institution

NOVA University Lisbon (NOVA) is a public Higher Education Institution whose mission is to serve society through knowledge & education, locally and globally, by developing teaching & research of excellence that create significant social & economic value. The fulfilment of its triple mission - Teaching, Research and Value Creation – requires (i) an academic environment that embraces equality, inclusion and free thinking to attract the best students from different cultural backgrounds and into the most diverse fields of knowledge, enabling them to discover their potential and develop their individual talent, (ii) high-quality teaching with a strong international setting in all cycles of studies, student-centered and closely linked with cutting-edge research, delivered by leading academics who are able to provide students with the necessary skills and knowledge to successfully develop a career anywhere in the world; (iii) a collaborative research within the University and with highly specialized and interdisciplinary strategic partner institutions of international relevance, aimed at creating innovative and impactful results to address complex challenges; and (iv) a knowledge-based & high-impact value creation activity, developed in collaboration with society & the economy, which promotes sustainable development at the economic, technological, cultural, social and health levels.

NOVA comprises 9 Schools across the Great Lisbon Area: 6 Faculties (NOVA School of Science & Technology - NOVA FCT; NOVA School of Social Sciences and Humanities – NOVA FCSH; NOVA School of Business and Economics – NOVA SBE; NOVA Medical School - NMS; NOVA School of Law - NSL; NOVA Information Management School – NOVA IMS), 2 Institutes (Institute of Hygiene and Tropical Medicine - IHMT; Chemical and Biological Technology Institute – ITQB) and the NOVA National School of Public Health – ENSP. It offers several degrees (BSc, MSc, PhD) and postgraduate courses. There are over 25.000 students at NOVA, and 2.771 academics & researchers of which nearly half are women.

Research at NOVA is thriving qualitatively and quantitatively, hosting 39 R&D Units, 92% of which are classified as Excellence or Very Good by international panels, positioning NOVA among the top 3 national universities with international acclaim. Twenty-three of these R&D Units are partnerships with other national institutions. Interdisciplinary research is also part of NOVA’s strategy, reflected in its 5 interdisciplinary platforms and the recent launch of NOVA Interdisciplinary Research Communities. R&D revenues grew by 60% from 2018 to 2022, totalling over 56.5M€.

Published research demonstrates a significant impact, with the normalized impact of Scopus publications in 2021 surpassing the world average by 26%. In 2022, NOVA published 3411 indexed publications (in *Scopus* and *Web of Science)*, 49.7% involving international collaboration, and 12.9% ranking within the top 10% of the most cited globally. NOVA stands out globally for its proportion of publications by female authors (34th worldwide).

Inclusiveness, non-discrimination and equality are central to NOVA's Strategic Plan 2020-2030 (SP) and the Gender Equality Plan, aligned with the Sustainable Development Goals (SDGs) of the UN 2030 Agenda. Particularly, NOVA develops initiatives & missions with positive impact on society in the areas of Health & Well-being (SDG3), Equal Rights & Opportunities (SDG5), Renewable & Affordable Energy (SDG7), Industry, Innovation & Infrastructures (SDG9), Inequality Reduction (SDG10), Promotion of Sustainable Cities & Communities (SDG11), Climate Change (SDG13), Life Below Water (SDG14), among others.

NOVA actively contributes to 10 Associated Laboratories (LAs), funded with 11.5M€ in 2022, and leads coordination in 3, hence with a prominent role in shaping national policies to address societal challenges, fostering researchers' careers, attracting talent, and conducting interdisciplinary research of excellence. NOVA is also actively involved in 15 Research Infrastructures (RI), coordinating 5 of them. Eighty percent of these RI are

integrated into international networks, including 5 as part of the European Strategic Forum for Research Infrastructure roadmap and 7 as members of the European Research Infrastructure Consortium.

In terms of funding, as happened in the H2020 program, NOVA stands out as the leading Portuguese University in securing Horizon Europe (HE) Research Funding (per capita): 68.80M€ across 119 projects until December 2023, including 37 (almost 1/3) as project coordinator. NOVA's researchers have been awarded 34 grants totalling 42.8M€ since the launch of the European Research Council (ERC) Grants programme, consolidating NOVA's position as the Portuguese university with the best ratio of ERC grantees per total number of R&D personnel. NOVA proudly stands as the first Portuguese university to receive an ERC Synergy grant in Humanities and an ERC Starting grant in Economics, underscoring its outstanding achievements, and reinforcing the importance of its strategic pillars. In 2022 alone, NOVA won 168 R&D projects, with a combined total value of 75M€, and had more than 500+ ongoing R&D projects, representing a financial envelope of 180M€. Notably, in 2023 the European Commission (EC) and the Portuguese Government granted 33M€ to establish the NOVA Institute for Medical Systems Biology (NIMSB), a pioneering centre of excellence focused on applying emerging biomedical and digital technologies in healthcare.

The participation in 19 Projects from the Business Innovation (C5) component of the Portuguese Recovery & Resilience Plan (32.8M€), as well as in 12 Collaborative Laboratories (CoLabs) reflects NOVA's commitment to promoting knowledge-based, high-impact value creation activities through collaborations with society and industry. This is emphasized by the NOVA Technology Transfer and Impact offices that provide specialized support for knowledge transfer & valorisation (KTV), entrepreneurship training, and partnership opportunities for impact-driven projects and initiatives. NOVA's technologies, specialized services & entrepreneurship initiatives are showcased in the NOVA Innovation portal (novainnovation.unl.pt), enabling the NOVA community & external partners to access information on activities related to the University's third mission. As of 2023, NOVA boasts +270 active patents, +125 start-ups & spin-offs, +600 active protocols & agreements with companies and non-academic institutions and has provided entrepreneurship training to over 20.000 students since 2015. In 2022 NOVA was recognized as the Young Entrepreneurial University of the Year by the Accreditation for Entrepreneurial and Engaged Universities, and as the Portuguese University with the most entrepreneurial students/alumni by Startup Portugal, accounting for a total of 268 startup founders.

NOVA's research performance has been recognized by prominent international rankings, leading to its inclusion in esteemed networks such as the Young European Research Universities Network (YERUN) and the EUTOPIA European University Alliance. As part of EUTOPIA, NOVA joins a connected & inclusive community of universities sharing common values & agendas. Through collaborative research, challenge-based learning, enhanced mobility opportunities, and shared innovation, EUTOPIA aims to address local & global challenges, contributing to a new model for higher education in Europe. EUTOPIA provides ample opportunities for all staff at NOVA, fostering a dynamic and enriching environment.

In summary, NOVA is a dynamic institution committed to excellence in education, research, and societal impact, with a strong focus on inclusiveness, interdisciplinary collaboration and global engagement.

Strategy to stabilizing careers and attracting and retaining talent of the Hiring Institution

Reforms in research careers and research assessment are key priorities at NOVA. As an early signatory to the Agreement on Reforming Research Assessment, a member of the Coalition for Advancing Research Assessment (CoARA), and the SECURE (Sustainable Careers for Research Empowerment) project, NOVA is fully committed to improving research careers and mitigating precarity. Establishing a stable workforce with transparent policies for career entry, advancement, and fair promotions is crucial for attracting & retaining talent. Therefore, it is a priority to decrease the percentage of researchers with precarious contracts, decrease the average age when entering Teaching or Research (T&R) careers, increase career opportunities for young researchers, and implement transparent & fair systems for promotion & recognition of merit. These priorities are aligned with the recent recommendations of the EC and the guidelines of the European Charter & Code for Researchers (ECCR).

To date, NOVA employs 509 individuals holding Ph.D. under full-time fixed-term contracts, categorized into Teaching (40) and Research (469), in addition to 40 individuals with post-doctoral fellowships, all together regarded as precarious contracts. Additionally, NOVA comprises 883 Professors (tenure/tenure-track) and 67 Researchers with full-time permanent contracts. This indicates that 35% of all Ph.D. holders exclusively dedicated to T&R at NOVA are employed under fixed-term contracts, not very distant from what the European Framework foresees as the maximum (1/3). However, there is a significant discrepancy between Research and Teaching careers.

The average age of an Assistant Professor at NOVA at the beginning of the contract is 39,9 years old, while for an Assistant Researcher, it is 42,3. Renewing staff and decreasing the average age at the entrance of each T&R category is therefore a crucial part of NOVA's Hiring Plan (hereafter referred to as HP). The University aims to have at least 40% of full-time researchers with permanent contracts by 2028 and above 65% by 2035, along with reducing the average age of permanent researchers by at least 10% by 2035. Given the good indicators for the teaching career, we do not anticipate changes in the % of full-time Professors under permanent contracts, but we do aim to decrease the average age at the entry of each Teaching category by 10% by 2035.

To attain these objectives, NOVA has recently introduced and will continue to implement innovative HR policies aligned with the CoARA principles. These include advocating for merit-based advancements and awards, alongside holistic evaluation systems for each T&R career level, monitored through its established Quality Assurance System. The system has two main governing bodies: the Vice-Rectory for Research and Innovation and the Strategic Research Council (CEI), which gathers representatives of the Direction of all Organic Units (OU), which, in turn, coordinate research activities developed at the R&D Units level.

Particularly, NOVA has recently revised both **Reg. for the Evaluation of Researchers' Performance** (6757/2023) and the **Reg. for Additional Incentives for Researchers**, to align with leading international standards and CoARA. NOVA's policy seeks to accommodate various research profiles and acknowledge the diverse outputs, practices & activities that enhance the quality & impact of research. Now, the triennial performance assessment for T&R staff comprises teaching, R&I, impact and knowledge valorisation, administrative tasks & community engagement, with qualitative and quantitative indicators informing the evaluation process. NOVA's **Reg. for the Provision of Teaching Service** (8178/2021) allows Professors to assume a predominantly Research profile (comprising R&D&I activities, academic administration, and management), with a Teaching load ranging between 2-4.5 hours per week/semester, in line with the eligibility criteria of *FCT Tenure*. The forthcoming **Reg. for Additional Incentives** will recognize exceptional research merit through additional remuneration, strengthening talent retention and attraction at NOVA, while the **Pedagogical Innovation Prize** (Reg.129/2021) aims to spotlight innovative teaching practices significantly impacting courses across diverse scientific fields. Furthermore, NOVA has implemented a new **Reg. for Individual Research Fellowships** (9484/2023) seeking to improve stipends compared to the national standards to attract outstanding young researchers. Upcoming initiatives for 2024 include the development of new **Regs. for Research careers** and **Science Management careers**, in line with ERA Action 17. Today, research support structures are an indispensable asset for attracting and retaining researchers, contributing to enhancing research impact, and NOVA also aims to strengthen its science management teams. The creation of a **Career Development Support Unit**, the development of a **strategic plan for attracting talent,** and the establishment of **flagship international Ph.D. programs** in strategic areas, modelled after some current programs funded by FCT are also envisioned. The application for the HR Excellence in Research Award via the HRS4R assessment process will start in 2024 and will be instrumental in fostering attractiveness to researchers.

Our T&R community has access to a wide range of infrastructures, facilities, and equipment through NOVA's R&D Units. Our commitment to offering state-of-the-art facilities and resources is fundamental to attract and retain talent but also to foster a culture of excellence and creativity. By equipping our academic community with the tools and support they need, we aim to facilitate groundbreaking discoveries and the development of solutions to complex challenges. Our R&D units serve as the backbone of this endeavor, offering a collaborative and dynamic setting where interdisciplinary collaboration flourishes.

FCT Tenure program

Identifying areas at risk of losing critical mass due to the conclusion of fixed-term contracts & retirements, as well as pinpointing emerging research domains, was crucial in shaping the HP. For the *FCT Tenure* program, NOVA will propose a total of 263 profiles (122 Teaching/141 Research), in research areas of strategic importance to its R&D ecosystem, fully aligned with the needs of the different Schools and R&D Units. Notably, by securing 141 Research profiles, NOVA will increase by 300% the total number of PhD holders with a full-time permanent contract as a researcher. Moreover, the anticipated loss of critical mass due to projected retirements, which could exceed 166 Professors until 2028 (2024: 47; 2025: 28; 2026: 25; 2027: 30; 2028: 36), and 7 Researchers (2025: 2; 2026: 1; 2027: 3; 2028: 1) needs to be urgently addressed. The FCT-Tenure program will allow to anticipate the hiring of staff to replace those to be retired ensuring a smooth transition and strengthening the alignment of teaching with research strategies. Many current precarious researchers possess suitable profiles and experience to qualify for positions in areas expected to see retirements, so the renewal of teaching staff will also contribute to improving the number of Professors with research profiles, strengthening the links between T&R. Teaching linked to research, and emphasizing scientific excellence is crucial to adapting to new paradigms and unique offerings, where the teaching-researcher profile is highly valuable.

The candidates to be recruited will contribute not only to reinforcing areas of excellence but also to consolidating or set up new strategic and emerging interdisciplinary areas in the different NOVA Schools, contributing to building new bridges and synergies between the different Schools. The strategic hiring plan will significantly bolster our dominance in the realm of **flagship areas** that include **Social Sciences and Humanities** (spanning from Management/Economics, History, Philosophy, Arts, Linguistics or Communication); **Health and Life Sciences** (including but not limited to Public and Global Health, Cancer Research, Biomedical Sciences, Nutrition, Metabolism, Neurologic Disorders or Health Promotion) or **Engineering & Technology** (Energy, Industry 4.0, Materials Sciences, Digital Technology, Mathematics, Electronics or Nanotechnology). Scientific areas like Macroeconomics, Law and the Blue/Green Economy, Vector-borne diseases or Molecular epidemiology will be consolidated through the reinforcement of dedicated T&R staff. The investment in emerging areas such as Data Science and AI applied to Health, Environmental and Sustainability research, or Precision Medicine is also noteworthy, underscoring our commitment to the development of interdisciplinary research.

The involvement of R&D Units/LAs will be pivotal in effectively contributing to research excellence, as all profiles will be integrated into R&D Units or LAs, benefiting from access to additional funding and support structures very important for their career development and progression.

By exploiting the University's wide-ranging partnerships with non-academic (NA) entities, 2 NA Chairs will strengthen NOVA's permanent staff, reinforcing the collaboration with external partners. NOVA HR guidelines are universally defined but Schools will establish their recruitment calls, taking into consideration the ECCR principles. All host entities will conduct transparent & rigorous selection processes, seeking individuals with exceptional talent & scientific impact potential. Internal governance procedures will ensure proper implementation of the HP, facilitated by close interaction between the CEI and the School's directive boards and pedagogical/scientific councils.

Importantly, effective knowledge transfer, valorisation (KTV) & outreach strategies are pivotal in amplifying the impact of the proposed T&R positions, ensuring that insights and innovations reach broader audiences and contribute to societal advancement. KTV serves as a vital link between academia & society, fostering innovation and development. The coordination of KTV and entrepreneurship support is centralized within a network that encompasses the Rectorate and 3 offices (IRIS-FCT, InnoValue NMS & ITQB Innovation Unit), ensuring proximity to the T&R community for optimal impact. NOVA fosters an entrepreneurial culture and facilitates the establishment of spin-off companies (Reg.157/2018) rooted in research discoveries & academic expertise. This initiative encourages the protection and valorisation of IP rights to enhance competitiveness, as outlined in **NOVA Intellectual Property Regulation** (1104/2020). **NOVA's outreach strategy** actively engages society & stakeholders through various channels, in local & national R&I networks. The **NOVA Impact Unit** connects NOVA with businesses & social sectors, CoLabs and Acceleration parks, fostering

KTV & social innovation, and facilitating joint research projects. NOVA also collaborates with the municipalities where it is located, contributing to community development and citizen-science initiatives. Public events available to all T&R staff as the **NOVA Science & Innovation Day** and the annual magazine, **NOVA Science**, showcase R&I to the broader community. Additional support schemes and initiatives are detailed in section 1.5.

With its HP, NOVA will prioritize the rejuvenation of its T&R staff while fostering teaching, research, and internationalization efforts. It emphasizes smart specialization in areas of distinction and conducts specialized, impact-driven, interdisciplinary research with global recognition, aligned with European & global agendas, significantly contributing to the nation's social & economic advancement. The efficient execution of this HP will allow NOVA to accomplish its Research agenda for the next decade, aiming to achieve at least a **10% increase in research activity**, and a minimum **20% growth in interdisciplinary research** focused on societal challenges, besides several other qualitative indicators.

Hosting Conditions of the Hiring Institution

Aligned with European guidelines, NOVA presently offers a comprehensive set of benefits & resources, with ongoing plans for enhancement, aimed at fostering better conditions for new hires and retaining existing talent, making it more appealing as a workplace. It includes a **regular evaluation process** & **career progression**; a **competitive salary package** (with **health benefits**) defined by national law and internal Regs for T&R careers, reflecting the profile's qualifications & experience as fair compensation for scientific excellence; and a **research funding package** to support the research work at NOVA (consumables, equipment, travel, publications, etc). NOVA also boasts **state-of-the-art infrastructures** recognized in the National European Roadmaps, supported by increased investment and managed by highly qualified staff, offering researchers exceptional resources and facilities to assist groundbreaking discoveries and foster innovation. This approach underscores our belief that access to high-quality research infrastructures, databases and equipment is critical to stimulating scientific inquiry and progress.

NOVA also promotes **incentive policies and merit recognition initiatives** to T&R staff, as described in the previous section. Furthermore, the **Reg. for the Provision of Teaching Service** (8178/2021) enables Professors at NOVA to adopt a research-oriented profile, resulting in a reduced teaching load conducive to R&D&I activities. This approach also benefits NOVA by integrating cutting-edge research in specific fields into corresponding teaching modules, hence providing the students with access to advanced knowledge to impact society positively.

Moreover, the T&R staff has both centralised (Rectorate) and decentralised (each School) **support structures**. The Rectorate has an R&I Support Directorate (DAII) responsible for promoting transversal activities, in close articulation with the units of each School. Support structures and activities at NOVA are professionalized and have highly experienced research management support in the areas of:

a. Funding, impact & project management – each School provides support to the T&R staff in securing competitive funding, creating impact with their research, and ensuring efficient implementation through optimised financial & administrative management of projects.
b. Infrastructure management – Schools provide the tools & support needed, aiming to facilitate groundbreaking discoveries and the development of innovative solutions (CryoEM, Microscope & Animal Facilities, Mass spectrometry and NMR, Social Science Datalab; CHAIN Biobank).
c. Innovation, Knowledge Transfer and Entrepreneurship – the Rectorate, through NOVA Impact, in articulation with specialized units in the different Schools provide a comprehensive set of activities throughout the innovation and knowledge valorisation value chain, including the protection and commercialization of research results; entrepreneurship training for the academic community; support to the creation of new spin-off companies, and liaison with industry or other societal organizations;
d. Science communication (SC) & outreach (NOVA FCSH has a master course on SC; ITQB develops numerous outreach activities/science fairs);
e. Scientific information management (PURE platform & NOVA Research Portal).
f. HR recruitment & career management.
g. Community services, internationalization & mobility opportunities.

NOVA also has Teaching & Mentorship support offices to leverage teaching activities, including access to pedagogical training, advanced teaching technologies & mentoring programs (NOVAFORMA, Talent@NOVA, NOVA doctoral School, etc).

In addition, NOVA provides **transversal initiatives** to both T&R as:

- Systematic training in the **new European impact metrics**, in line with NOVA's participation in the SECURE and OPUS projects - recent examples: the Research Impact Narratives Challenge and a webinar about Narrative CVs (>350 participants).
- ERC grant applications support (1:1 coaching/bootcamps).
- Preparation for European projects (Fit4Funding® program developed at NOVA).
- Entrepreneurship & Knowledge Valorisation activities (initiatives available at novainnovation.unl.pt) - T&R staff can engage as participants or mentors in entrepreneurship and innovation programmes.

Within NOVA's R&D ecosystem, a dynamic **interdisciplinary research environment** thrives. Events held throughout the year facilitate institutional networking and potentiate partnerships; e.g. **NOVA Science & Innovation Day 2023** showcased research work and innovations in all research areas, engaging 300+ participants. This annual event boosts scientific visibility while fostering cross-cutting collaboration, aligned with the 2030 Agenda. NOVA also offers T&R staff engagement opportunities through **5 Interdisciplinary Platforms** and the recent **NIRC on Sustainable Energy Systems**, in partnership with Galp, fostering synergies among researchers from diverse Schools and backgrounds. Within this framework, T&R staff will have the opportunity to cultivate collaborative projects and seek support through **seed-funding programs** for innovative & PoC ideas. Underway is the creation of an additional NIRC focused on addressing challenges related to the Oceans.

Furthermore, as part of the **YERUN and EUTOPIA alliances**, NOVA engages in beneficial activities for T&R staff, including doctoral cotutelle studies, the Young Leaders Academy for networking & leadership development for young T&R, and the Research Connected Communities model for interdisciplinary projects addressing global challenges.

NOVA's initiatives to improve work-life & gender balance, inclusiveness, and parenthood conditions in T&R careers reflect the University's dedication to creating an atmosphere that values diversity and promotes equal opportunities. Some of the current initiatives include:

- The establishment of the **Office of Gender Equality & Inclusion**, and the creation of the **NOVA's Denunciations Portal**.

- Implementation of **transparent, supportive & internationally comparable recruitment procedures**, tailored to the type of positions advertised.
- Promotion of **inclusive hiring practices** to foster gender balance, inclusiveness & equity in all Schools and R&D Units/LAs.
- **Introduction of gender equity**, including mentorship initiatives and efforts to address the gender pay gap.
- Implementation of a **transparent evaluation system** aligned with CoARA principles.

Concerning **work-life balance**, NOVA provides flexible work arrangements to accommodate the needs of its T&R staff. To ensure the **balance between T&R duties** for new researchers hired in teaching careers, the Pedagogical/Scientific Councils of the Schools will proactively implement measures to achieve optimal equilibrium between T&R responsibilities. Annual teaching allocations, to both T&R profiles will be ensured by the adherence to legal teaching workload limits for researchers, but also professors with a research profile (Reg. 8176/2021). Some Schools already have internal hiring procedures for teaching positions which include reduced teaching loads with no management or administrative duties, ensuring focus on research. If individuals find the balance between their T&R duties inappropriate, they will be encouraged to report their concerns through the internal governance structures of their Schools or via the NOVA's Denunciations Portal.

NOVA has recently consolidated its **family-friendly policies** for all staff, such as parental leave support, on-site childcare facilities in the Caparica campus, resources for new parents to facilitate a smoother transition back to work, and ateliers organized with children's activities open to the entire NOVA Community during school holidays. NOVA also offers its staff **counselling** services and well-being workshops, **sports and leisure activities**, as well as supports a set of initiatives that contribute to its cultural richness and promote human development through **volunteer** experiences to enhance social and community awareness (SASNOVA).

Aligned with European recommendations, NOVA will soon expand its initiatives by establishing a centralized **Career Development Support Unit**, to nurture personal & professional growth of our T&R staff. It will offer resources designed to help them align their interests with professional opportunities, both within academic & NA realms – i.e. comprehensive mentorship & training programs encompassing both scientifically based & soft-skills oriented approaches, as well as pathways for intersectoral mobility; opportunities to facilitate international experiences & collaborations, enhancing T&R staff's career prospects, visibility & competitiveness for funding or awards.

In addition, each T&R position will also enjoy specific conditions from the Schools or R&D Units/LAs, as delineated in the requested profiles. The role of the various host entities within NOVA's ecosystem aligns with the University's research strategy and is crucial for the success of the HP. NOVA has considered the needs of the R&D Units/LAs in the design of its HP, both in terms of renewing T&R staff to strengthen key research areas as well as fostering planned growth in new research areas. As so, this involves the cofinancing & sharing responsibilities to recruit PhD holders in T&R careers within the FCT Tenure program, as ALL T&R hired members will be integrated within the R&D Units/LAs at NOVA. The strategic alignment with R&D Units is instrumental as they provide additional funds for research, access to specialized equipment, infrastructures and national and international research networks crucial for the development of researchers' careers.

Overall, the distinctive hosting conditions within NOVA and its R&D ecosystem play a crucial role in providing optimal conditions for new hires and retaining existing talent, rendering it highly attractive as a workplace.

Additional Host Institutions

Universidade Nova de Lisboa - Faculdade de Ciências e Tecnologia da Universidade Nova de Lisboa

Profile of the research staff of the Host Institution

	Description	Number
A	Total number of integrated PhD holders, with a fulltime permanent contract as a researcher (ECIC or equivalent), associated with the Institution on 30/11/2023	16
B	Total number of integrated PhD holders, with a fulltime permanent contract as a professor (ECDU, ECPDESP or equivalent), associated with the Institution on 30/11/2023	420
C	Total number of PhD holders, with non-permanent fulltime research contracts ("Norma Transitória", non-permanent "FCT-CEEC", "Bolsas inv. pós-doutoral", etc.) associated with the Institution on 30/11/2023	114

Description of the Additional Host Institution

The NOVA School of Science and Technology (NOVA FCT) is acclaimed as one of the top three institutions in Portugal, specializing in Engineering and Sciences. Renowned for its research excellence, superior course quality, and the impressive employability of its graduates, including bachelor's, master's, and Ph.D. holders, NOVA FCT is home to a vibrant community of around 8.500 students. Its exceptional campus fosters a culture of outstanding teacher-student relationships and offers a dynamic academic life enriched with a variety of cultural and sports activities.

All programs at NOVA FCT, particularly engineering courses, are accredited by the A3ES (Agency for Assessment and Accreditation of Higher Education) and recognized by prestigious bodies such as the Order of Engineers, FEANI (Federation of Professional Engineers in Europe), and EUR-ACE (European Accredited Engineer). The institution boasts 13 Departments in diverse fields like Chemistry, Environment, Materials, Engineering, and Informatics, and operates 16 R&D Units. It offers a wide range of study cycles, totaling 117 (19 Bachelor's, 11 Integrated Master's, 49 Master's, and 32 PhDs).

NOVA FCT's commitment to scientific excellence is evident in its significant scientific output and numerous publications in prestigious international journals, achieving a SciVal Citation Impact index of 1.35, which is 35% above the global average. Its active engagement in leading technological

university networks such as CESAER and partnerships with esteemed institutions like MIT, CMU, and the University of Texas highlight its global presence and dedication to excellence.

The school's strategic emphasis on sustainable development closely aligns nearly all recruitment plan vacancies with the Sustainable Development Goals (SDGs), reflecting a proactive stance towards contemporary societal challenges. This focus extends to the organization of research and teaching, prioritizing areas such as Sustainability, Energy, IoT, Industry 4.0, Life Sciences, Health Sciences and Technology, and Digital Technology, among others. This ensures integration with the broader ecosystem, including departments, educational offerings, R&D Units, and strategic areas.

Our recruitment plan aims to hire 53 assistant professors, 1 associate professor, 22 assistant researchers, and 5 principal researchers to bolster the link between teaching, research, and innovation. We seek teaching researchers who are not only adept at pedagogical innovation but also embody an innovative and entrepreneurial spirit to empower future generations.

Collaboration and knowledge transfer are cornerstones of NOVA FCT's mission, underscored by its participation in 9 COLABs and securing 17 ERC grants, showcasing its role in fostering innovation. Initiatives like the Proof of Concept at ERC grants aim to translate research into societal benefits and enhance the maturity of technologies developed in the university setting.

The recruitment strategy, supported by the new regulation for teaching services at NOVA University of Lisbon, is tailored to attract teaching researchers with minimal teaching loads, enabling a focus on research activities. This approach ensures the necessary resources and support for the successful execution of tasks outlined in each vacancy, committing NOVA FCT to an environment that encourages innovation and excellence.

In conclusion, NOVA FCT's strategic initiatives, spanning structured departments, educational offerings, R&D Units, and strategic areas, are thoughtfully designed to foster knowledge and innovation. These efforts, aimed at attracting and nurturing the next generation of scholars and innovators, solidify its position as a leader in science and technology education and research. Through its contributions to education, research, and collaboration initiatives, NOVA FCT makes a significant impact on society and advances the sustainable development goals.

Additional Host Institutions

Instituto de Nanoestruturas, Nanomodelação e Nanofabricação

Profile of the research staff of the Host Institution

	Description	Number
A	Total number of integrated PhD holders, with a fulltime permanent contract as a researcher (ECIC or equivalent), associated with the Institution on 30/11/2023	9
B	Total number of integrated PhD holders, with a fulltime permanent contract as a professor (ECDU, ECPDESP or equivalent), associated with the Institution on 30/11/2023	51
C	Total number of PhD holders, with non-permanent fulltime research contracts (“Norma Transitória”, non-permanent “FCT-CEEC”, “Bolsas inv. pós-doutoral”, etc.) associated with the Institution on 30/11/2023	48

Description of the Additional Host Institution

The Institute for Nanotechnologies, Nanomaterials and Nanosciences (i3N), The Institute for Nanotechnologies, Nanomaterials and Nanosciences (i3N), was founded in 2006 as a Portuguese Associated laboratory and presently has 2 Hubs distributed along:

- Setúbal Península (I3N/CENIMAT. http://www.cenimat.fct.unl.pt/). This hub is more devoted to printing and nanofabrication processes and characterization of advanced functional materials for electronics, energy and health applications, at nano and micro scales;

- Aveiro (I3N/Aveiro. http://www.i3n.org/Page.aspx?pt=10). This hub is more devoted to look at materials interfaces and systems modelling and biomedical applications.

The main objective is to advance the discovery, innovation, development, and industrial deployment in the multidisciplinary area of nanotechnologies and advanced functional materials for a broad range of cross-cutting fields, to enhance the quality of life and to achieve sustained economic and citizens benefits, in line with the proposed EU Green Deal approach, aiming to improve the level of materials science and technology understanding and their use as enabler to serve multi-sector applications and exploit their frontiers of knowledge, namely at a nanoscale levels, such as for 1D and 2D applications.

Nowadays i3N is one of the major Portuguese institutions in nanosciences and nanotechnologies, fully aligned with Horizon Europe as well as with the 17SGD of UN, highly reputed for its *pioneer worldwide work in the field of transparent electronics and paper electronic.* One of his integrate members and past coordinator (E. Fortunato, now minister of Science Technology and Higher education of Portugal), won the Horizon Impact Award 20220 (1st edition), thanks to the project ERC Advanced grant **Invisible**. Presently, this project has been elected as one of the best as breakthrough projects approved between 2015-2022, with great impact in industry (defined as a revolutionary work that led to deep change in existing paradigms also opening a new stream of research). This will be announced by ERC/ERCEA in March 2024. Moreover, the work on paper electronics is considered also as one of the 20 best innovations, ever done in Europe.

i3N has 249 members including 53 academic staff, 41 Pos-Docs, 57 PhD students, 15 technicians/administratives and 83 collaborators. 30% of i3N members are coming abroad aligned so with its international strategy. As a cross-interdisciplinary institute built on existing institutional strengths,

i3N offers world-class leading-edge research, innovation, and education in 4 strategic research fields: *Sustainable micro and Nano fabrication, Green and Clean Energy Systems; Nano materials Engineering and Functional Interfaces; Biomedical Devices and Systems.*

To perform the research activity among the 4 identified thematic lines, we have a set of 6 groups, 3 acting mainly in Aveiro hub (Nanophotonics and Optoelectronics; Theoretical and Computational Physics; Physics of Advanced Materials and Devices) and 3 in Caparica hub (Materials for Electronics, Optoelectronics and Nanotechnologies; Soft and Biofunctional Materials; Structural Materials). Here, the research focus is towards industrial and societal challenges and the qualification of highly skilled mass of human resources, thus targeting real social impacts and ambitioning to contribute for a sustainable socio-economic growth, where citizens point-of-view counts to foster our creative imagination towards disruptive science, from which new start-ups/industry vision will be born.

The extensive international networks where i3N members are involved, originated between 2018-2023 i3N the coordination/participation on 56 international projects, capturing more than 79M€, and proudly almost duplicated the number of ERC grants secured (so far 11 ERC grants conceived).

i3N aims so to continue being the pivotal element on this trans-disciplinary strategy, exploiting to the extreme of Excellency the complementary scientific and technical capabilities within the 2 hubs for the next generation of nano-enabled products, where we aim to exploit materials multi-functionalities and their sustainable integration on the circular economy loop, to serve the industry challenges of the future, grounded on creativity and breakthrough born concepts.

Among the far-front developments, we highlight the activity related to new sustainable technologies, such as Laser Induced Process (LIP), 3 D printing; Additive Manufacturing; nanofabrication; Clean Room facility for chemical and physical processing of micro and nanodevices; Bio smart materials applications; Flexible and conformable Electronics and Optoelectronics, among others.