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Status
Grant

Closes in
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Positions

Assistant Professor in Chemical and Biological Engineering – Green Solvents and Sustainable Extraction Processes; LAQV Chair

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
Laboratório Associado para a Química Verde - Tecnologias e Processos Limpos

Call's publication date

October to December 2024

Scientific domain

Engineering and Technology Sciences

Scientific area

Chemical Engineering

Scientific sub-area

Chemical Process Engineering

Field(s) description

Chemical and Biological Engineering (Green Chemistry, Green Solvents and Sustainable Extraction Processes)

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

SDG Goal 4: Quality Education
SDG Goal 9: Industry, Innovation and Infraestructures
SDG Goal 12: Responsible Production and Consumption

Research unit/Associate laboratory chair

Name of the Host Research Unit/Associate Laboratory

Laboratório Associado para a Química Verde - Tecnologias e Processos Limpos

Commitment Declaration

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Obtained on 29-02-2024 at 09:11:15

Does it involve co-funding?

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Job description, scientific profile and rationale

Assistant Professor in Chemical and Biological Engineering – Green Chemistry, Green Solvents and Sustainable Extraction Processes. We are seeking a highly qualified and motivated Assistant Professor in the field of Chemical and Biological Engineering with emphasis in Green Chemistry, with relevance in Green Solvents and Sustainable Extraction Processes. 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 Green Chemistry, with an emphasis on Green Solvents and Sustainable Extraction Processes.
2. Design and teach undergraduate, graduate courses in Chemical and Biological Engineering, with a focus on applications of Green Solvents and Sustainable Extraction Processes.
3. Supervise graduate students & mentor undergraduate researchers in research projects related Green Solvents and Sustainable Extraction Processes.
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.

The ideal candidate will possess the following qualifications and attributes:

1. Ph.D. in Chemical Engineering, Sustainable Chemistry, Biotechnology, or a related field, with a strong focus on Green Chemistry.
2. Proven expertise in development of sustainable processes with a track record national and international research projects related to extraction methodologies using alternative solvents, with a clear application in by-product valorization.
3. Extensive knowledge of alternative solvents, including supercritical fluids and deep eutectic systems, including fundamental understanding and optimization of process development.
4. Experience in both mentoring students and providing advanced training. Teaching undergraduate and graduate courses in Sustainable Engineering and Biotechnology, with a commitment to innovative and effective pedagogical approaches.
5. Ability to secure external research funding and a strong publication record in reputable scientific journals.
6. International recognition, through major awards & prizes, invitations to lecture at academic institutions and/or the participation in conferences as invited speaker.
7. Demonstrated technology transfer and/or pilot applications through collaborative projects with industry.
8. Strong leadership and communication skills, with the ability to collaborate effectively within interdisciplinary teams.

The recruitment of an Assistant Professor in **Chemical and Biological Engineering** with expertise in **Green Solvents and Sustainable Extraction Processes** aligns with LAQV&NOVA FCT strategic goals in promoting research and education in Green Chemistry. LAQV is strongly committed to the advancement of this field of knowledge, particularly in its expansion to other areas, which have not yet been fully explored, namely with emphasis on Cascade Sustainable Processes. Addressing the growing demand for advancements in valorization of by-products and the contribution towards a carbon neutral circular economy, this position will ensure advances in areas such as supercritical carbon dioxide, subcritical water, ultrasound and microwave extraction, pulse electric field and deep eutectic systems. It will be integrated in the LAQV group of “Materials for Sustainability and Wellness” contributing to drive the innovation and knowledge valorization together with a multidisciplinary team. With overall objective to develop and produce advanced multifunctional materials, using sustainable technologies the key research objectives include exploring green solvents and sustainable processes by processing different natural materials and explore the development of innovative products to provide improved health benefits, investigating physico-chemical, biochemical and bioactivity properties of materials. It is expected that the candidate is able to: i) Propose sustainable processes based on green solvents for the valorization of agro-industrial by-products; ii) Investigate and optimize the use of alternative processes for enhanced efficiency; iii) Conduct in-depth analysis of obtained products using advanced characterization techniques. The intersection of green chemistry with process development, namely based on sustainable processes, presents promising applications for the valorization of industrial by-products with potential applications in agriculture, food, pharma and nutraceutical applications. The successful candidate will contribute to the institution's reputation for excellence in research and education while fostering collaborations with other institutions and with a strong focus on industrial partners. This position reflects our commitment to staying at the forefront of scientific discovery and making meaningful contributions to the field of Chemical and Biological Engineering.

Benefits and resources offered to the selected candidate

To attract top talent for the Assistant Professor role in Chemical and Biological Engineering, focusing on Green Chemistry, we offer a comprehensive benefits package. State-of-the-art facilities are available at NOVA FCT, granting access to cutting-edge laboratory facilities equipped with the latest instrumentation for extraction, namely supercritical carbon dioxide and subcritical water facilities, at the lab and pilot scale, state-of-the-art laboratory for natural deep eutectic systems fully equipped analytical characterization laboratories. The Assistant Professor will benefit from a collaborative research environment, with opportunities to engage in interdisciplinary collaborations within the NOVA FCT, LAQV, UCIBIO&MEtRICs. LAQV MatSusWell group is composed of a team with a background in Chemistry, Materials Science and Engineering, Biomedical Sciences, and Entrepreneurship and Business Development providing a healthy collaborative research environment, and fostering a rich and diverse research experience. NOVA FCT&LAQV provide access to training, advanced technologies, and mentorship programs to enhance the candidate's effectiveness in conveying knowledge and fostering the academic development of students. At the chemistry department, the candidate will be able to pursue a very hands-on approach to the teaching activities, benefiting from the dedicated laboratories allocated for classes. These resources aim to enhance the candidate's effectiveness in conveying knowledge and fostering the academic development of students. The Assistant Professor will have access to a broad network of collaborators within the NOVA FCT and LAQV, UCIBIO and MEtRICs. This networking facilitates the exchange of ideas, fosters collaborations, and opens avenues for future research partnerships. Overall, the package supports research, teaching, and career development in a dynamic, collaborative environment at LAQV and NOVA FCT.

Context, expected impact, and relevance of the scientific profile

In the pursuit of excellence in Chemical and Biological Engineering, particularly in the specialized domain of Green Solvents and Sustainable Extraction Processes with a focus on Green Chemistry, the Assistant Professor position stands as a pivotal element in shaping the scientific

landscape of LAQV. This role will provide a new impetus to an area that is largely growing and is strategically aligned with the scientific strategies of NOVA FCT and LAQV.

i. The Hiring Institution (HI): The candidate’s scientific profile is strongly aligned with NOVA FCT and LAQV mission complementing the scientific staff and the institution's commitment to cutting-edge research and academic brilliance. This position, strongly centered in the valorization of agro-industrial by-products through highly innovative sustainable processes based on alternative and green solvents, will contribute towards advancing scientific frontiers. Fostering an environment conductive to major innovations in Chemical and Biological Engineering, NOVA FCT and LAQV benefit from the candidate´s expertise in technology transfer in order to create value from the knowledge generated, in areas that range from food, nutraceutics, cosmetic, pharmaceutics or agriculture.

ii. The Research Unit and/or Associate Laboratory: Within the Associate Laboratory, the Assistant Professor's expertise in Green Solvents and Sustainable Extraction Processes will catalyze collaborative research initiatives. The synergies between the candidate's profile and LAQV objectives, particularly within the MatSusWell group aim to boost the excellence of the scientific output, fostering an atmosphere of innovation and interdisciplinary collaboration, which can be translated into viable products.

iii. The Faculty or Department: Integrated within NOVA FCT and LAQV, this position significantly contributes to the faculty's academic progress and state of the art research. The scientific profile aligns with the faculty's goals, strengthening its position as a hub for excellence in Chemical and Biological Engineering. The emphasis on Green Chemistry and Sustainable Extraction Processes aligns with the faculty's commitment to staying at the forefront of scientific advancements. The Assistant Professor will bring a new vision to the Department, contributing not only for the scientific developments herein performed, but will also contribute to the educational training of our students and early-stage researchers.

iv. Relation with Other Positions: The Assistant Professor's role will contribute synergistically with other positions proposed in this FCT-tenure application to the advancement of Green Chemistry. 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.

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

Laboratório Associado para a Química Verde - Tecnologias e Processos Limpos

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	14
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	132
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	139

Description of the Additional Host Institution

The Laboratório Associado para a Química Verde | Associated Laboratory for Green Chemistry is the Portuguese Research Centre for Sustainable Chemistry, hosted by the Network of Chemistry and Technology (REQUIMTE). The vision of LAQV is for a world in which Sustainable Chemistry is used as a powerful and dynamic tool to tackle the societal, economic, and environmental challenges of modern life. Accordingly, our mission is to initiate, advance, and promote the principles of Sustainable Chemistry through a multiplicity of research, networking, training, and outreach activities.

LAQV aims at keeping a pivotal role in the Portuguese scientific system and at continuing to be an internationally recognized partner in all areas related to Sustainable Chemistry, a key component of an imperative World Sustainable Development. Modern society relies on chemicals and chemical processes for its way of living. Concomitantly, it is well recognized by governments, industry, and the general public that a Sustainable Development is crucial to tackle the challenges of society. Therefore, a new way of thinking Chemistry has emerged, aiming the implementation of clean chemical reactions and processes that reduce the amount of materials, energy, costs, and risks. Based on these principles, LAQV focuses its activity in six Thematic Lines aligned with the Research Agenda of the European Technology Platform for Sustainable Chemistry (SUSCHEM), the United Nations (UN) Sustainable Development Agenda, and the priorities of Horizon 2020 and Horizon Europe. The complementary proficiencies to stimulate innovation across these Thematic Lines are provided by eleven Research Groups that aggregate scientists who share similar backgrounds.

Within the opportunities opened by the FCT Tenure program LAQV pursues to increase the research international impact in the Sustainable Chemistry field, to make sure that more research outputs lead to economic and social outcomes, to increase co-operation with industrial partners and to attract the best young researchers to the multiple topics supporting Sustainable Chemistry. LAQV will increase the links with industrial partners focused on implementing clean technologies and processes and the sharing the principles of Sustainable Chemistry and research outputs with the general public, government, and industry. LAQV will be able to increase its presence in the community and to assist stakeholders in making decisions on health and safety issues related to (bio)chemical products or processes, through increased collaboration with regulatory bodies.

LAQV impact strategy is thus sustained on the recruitment of 18 research and teaching positions covering strategic areas of LAQV and reinforcing the research groups and thematic areas, reinforcing its international recognition in the field of Green Chemistry. On the top, 5 research positions are opened in Advanced Processes of Pollution Control, Hybrid Materials and Conservation and Restoration Science, which empowers LAQV as a player addressing crucial societal challenges.

The research outputs and knowledge produced by the hired teaching researchers and researchers will be translated to the education and training within Nova FCT, reinforcing its strategic goal of pedagogical innovations and play a pivotal role in the education for sustainability.