

PUBLIC NOTICE FOR A RESEARCH SCHOLARSHIP

ANNOUNCEMENT OF A RESEARCH INITIATION GRANT

Reference PRBI/5/2025

Polytechnic University of Coimbra (IPC) is now accepting applications to award one Research Initiation Scholarship within the scope of the project Green Ammonia Generation: Electrocatalytic Valorization of Nitrate-Contaminated Water Sources using Acacia Biochar-based Electrodes, with the operation code 2023.13409.PEX, financed by the Foundation for Science and Technology (FCT), under the conditions set out below.

General scientific area: Engineering

Specific scientific area: Chemistry and/or Environment and/or Bioengineering

Admission requirements:

The candidate must i) be enrolled in an undergraduate course in Chemical Engineering/Environmental Engineering/Bioengineering or, being licensed enrolled in a course that does not award an academic degree¹; ii) have experience in laboratory work, effluent/drinking water treatment processes and waste recovery; iii) having basic knowledge in electrochemistry, catalysis and/or carbon-based materials will be valued; iv) be fluent in Portuguese and English speaking and in writing.

If enrolled in a course that does not award an academic degree, the candidate cannot exceed an accumulated period of one year in this type of scholarship, according to the Research Scholarship Regulation of the Polytechnic University of Coimbra, approved by Order No. 5963/2020, published in the DR, 2nd series, No. 106, of June 1, 2020, rectified by Rectification Declaration No. 742/2020, published in the DR, 2nd series, No. 212, of October 30, 2020.

Objective and work plan:

Ammonia (NH₃), a key compound in several industries, faces sustainability challenges due to its conventional production methods, namely the Haber-Bosch process. This process not only consumes significant energy, but also contributes 1-3% of global CO₂ emissions. To address this issue, electrocatalytic systems are beginning to be explored as greener alternatives, offering operational simplicity and a reduced environmental footprint. However, challenges in the classical electrochemical reduction of N, particularly in protonation and breaking of the N≡N triple bond, have encouraged investigations into the electrochemical reduction of nitrate to NH₃. Nitrate emerges as one of the main pollutants of drinking water worldwide due to human activities, thus presenting an opportunity for sustainable water treatment and resource recovery with a good cost-benefit ratio. Therefore, this scholarship will aim to implement and develop the following activities:

1. Bibliographic review on the work to be developed.

¹ Are considered as “Courses not awarding an academic degree” those referred to in paragraph e) of § 3 of article 4 of Decree-Law no. 74/2006, of March 24, in its current wording, provided that they are developed in association or cooperation between the higher education institution and one or more R&D units, in accordance with the provisions of paragraph e) of Article 3 of the FCT Research Grants Regulation.

2. Synthesis and characterization of electrodes based on acacia biochar.
3. Evaluation of new electrodes for NH₃ generation via electrochemical reduction of synthetic nitrate solutions.
4. Promotion of outreach activities.
5. Writing technical reports and scientific article(s) for submission to peer-reviewed international journal(s).

Scholarship period and renewal:

The scholarship lasts for 6 months, is non-renewable, and is exclusive, in accordance with the Research Scholarship Regulations of the Foundation for Science and Technology, I.P. in force, starting on Mars 2025.

Monthly maintenance allowance:

The value of the scholarship will be 601.12 euros, according to the table of values of Research Scholarships in the Country awarded by FCT, I.P. (https://www.fct.pt/wp-content/uploads/2024/02/Tabela-de-Valores-SMM_atualizacao-2024.pdf) with payment being made monthly, by bank transfer.

This amount will be increased by the voluntary social security corresponding to the first level, if the candidate chooses to register, and personal accident insurance will also be required.

Workplace and scientific guidance:

The work will be carried out at the Coimbra Institute of Engineering of the Polytechnic University of Coimbra, under the scientific supervision of Doctor Ana Sofia dos Santos Fajardo.

Selection criteria:

Applications will be evaluated on a scale of 0 to 20 points, using the following weightings:

a) Curricular Assessment (80%), with a value of 40% for academic qualifications (CA1), 30% for additional academic/professional training and experience in participating in projects and teamwork (CA2) and 10% for cover/motivation letter (CA3);

b) Interview (20%), carried out with the two candidates who are best placed in the curriculum evaluation. With a value of 10% for the ability to demonstrate knowledge acquired in the requested functions (I1) and 10% for verbal and non-verbal communication skills in Portuguese and English (I2).

The final classification (FC) will be given according to the following formula:

$$FC = (0.4 \times CA1) + (0.3 \times CA2) + (0.1 \times CA3) + (0.1 \times I1) + (0.1 \times I2)$$

The selection committee reserves the right not to select any candidate if none of them has the appropriate profile to perform the functions.

Jury composition:

The jury responsible for the selection process will be made up of Doctor Ana Sofia Fajardo (President), Doctor Verónica Oliveira and Professor Cândida Malça (Effective Members) and Professor Luís António Amaral and Professor Ana Cristina Veloso (Alternate Members).

Documents to present:

Applications must include the following documents:

1. Application form available on the internet page for this competition at https://www.ipc.pt/bupc/concursos/form/concursos_bolseiros
2. Identification, residence address, identification document number and tax identification number;
3. Motivation letter, where the candidate must explain his/her motivation to carry out this multidisciplinary work plan, as well as mention whether he/she is available to start the scholarship on the scheduled date;
4. Candidate's updated Curriculum Vitae (CV), with a clear description of his/her qualifications and skills;
5. Document(s) proving ownership of the academic degree and/or diploma(s) required in the competition, preferably indicating the final average and grades obtained per curricular unit. Candidates holding foreign qualifications must prove their academic degree and foreign diploma in accordance with Decree-Law No. 66/2018, of August 16;
6. Document(s) proving all activities and work mentioned in the Curriculum Vitae;
7. Document proving enrollment and registration in the undergraduate or non-degree course, with registration being able to be done on a date after the registration date, as long as it is prior to the grant contracting;
8. Other document(s) and/or certification(s) considered relevant by the candidate (e.g.: training certificates, letters of recommendation, other research scholarships obtained);
9. (optional during registration phase). Candidates with academic qualifications obtained abroad will have to present a Certificate of Recognition, in accordance with applicable legislation. This document is only mandatory during the hiring phase.

Deadline for receiving applications:

This will take 10 working days, between **17/02/2025 and 28/02/2025**.

Candidates must access and register on the website: https://www.ipc.pt/bupc/concursos/form/concursos_bolseiros to submit their application, selecting the procedure for which they wish to apply.

The application must be submitted exclusively in digital format, and the accompanying documents must be in portable document format (pdf), with the exception of documents that must be submitted in other digital formats.

The application is completed by filling in the sections available at the aforementioned electronic address.

When formalizing the application, if it contains a confidential document that reveals a commercial or industrial secret, or a secret relating to literary, artistic or scientific property, the candidate must expressly indicate such

reservation, under penalty of the work in question being freely accessed by any of the parties. other candidates, in the context of process consultation.

When submitting the application, the candidate must provide the data strictly necessary for this purpose, under the terms of this notice, and must hide personal data that may exist in the documentation submitted, under penalty of such data being freely accessed by any of the other candidates, in the context of process consultation.

Applicable legislation and regulations:

The granting of scholarships is based on the following legal diplomas:

- Law no. 40/2004, of August 18 (Statute of the Scientific Research Fellow) amended and republished by Decree-Law no. 12/2013 and Decree-Law no. 89/2013;
- Regulation of Grants and Research of the Foundation for Science and Technology in force;
- Order No. 12709/2016 published in the DR, II series, of 21/10/2016, of the Polytechnic University of Coimbra, (IPC Research Fellow Regulation).

The scholarship contract template, as well as the final reports to be prepared by the scholarship holder and the scientific advisor, are those included in the annexes to the Scientific Research Scholarship Statute mentioned above.

Form of publication/notification of results:

The results of the evaluation will be published within 90 working days from the deadline for submitting applications, by sending a communication to the candidates via email. After the results are announced, candidates will be notified to, if they wish, express their views in a preliminary hearing, within a maximum period of 10 working days after that date. After this deadline, selected candidates will have to declare, in writing, their acceptance and communicate the effective start date of the scholarship. Unless just cause is presented, failure to make the declaration within the aforementioned period is equivalent to renouncing the scholarship. In case of resignation or withdrawal of the selected candidate, the next highest ranked candidate will be notified.

For more information, please contact: Doctor Ana Sofia Fajardo by email: sofia.fajardo@ipc.pt

Coimbra, 27th January 2025