

Research Studentship for student of a course that does not award an academic degree

Applications are open for one (1) Research Studentship, within the framework of project (1801P.00992.1.01) CEFEMA UIDP/04540/2020 - LINHA CENTRAL - IST-ID financed by national funds through FCT/MCTES (PIDDAC) under the following conditions:

Scientific Area: Chemical Engineering

Admission Requirements: to hold a master degree and be enrolled at a course that does not award an academic degree and it is integrated in the educational project of a higher education institution, performed in association or cooperation with one or several R&D unit.

Workplan: The work will focus on the comprehensive study and characterization of key components necessary for the development of electrolyzers for green hydrogen production. This includes electrodes, diaphragms, and membranes, with the goal of enhancing the performance of both conventional alkaline electrolyzers and anion-exchange membrane electrolyzers. The study will evaluate the activity of prepared electrodes, focusing on their performance for the hydrogen and oxygen evolution reactions. Additionally, polymer electrolyte membranes will be characterized using a range of physicochemical and electrochemical methods to assess their thermal and mechanical stability, morphology, structural analysis, swelling ratio, water uptake, contact angle, chemical stability, ion exchange capacity, and ionic conductivity. The developed components will be tested in lab-scale electrolysis cells that will be 3D printed. The electrolyzer performance will be assessed by running cell polarisation curves, as well as constant potential/current experiments, while simultaneously measuring the volume of gas produced at the electrodes. The work is expected to lead to the production of cost-effective electrodes and optimized membranes, paving the way for the design of more efficient water electrolyzers.

Legislation and Regulations: Statute of Scientific Research Fellow, approved by Law nr. 40/2004, of August 18, as worded by Decree-Law nr. 123/2019, of August 28; FCT Regulation for Research Studentships and Fellowships, available on <https://www.fct.pt/apoios/bolsas/docs/RegulamentoBolsasFCT2019.pdf> and <https://dre.pt/application/file/a/127230968>.

Workplace The work will be developed at CeFEMA, of Instituto Superior Técnico under the scientific supervision of Professor Diogo Santos.

Duration: The research fellowship(s) will have the duration of 7 months. It's expected to begin as soon as possible and may not be renewed.

Monthly maintenance allowance: According to the values for Research Fellowships awarded by FCT in Portugal (https://www.fct.pt/wp-content/uploads/2024/02/Tabela-de-Valores-SMM_atualizacao-2024.pdf), the amount of the monthly maintenance allowance is €1259,64, being the payment method by Wire Transfer.

Selection methods: The selection methods will be the following: The selection methods to be used will be the following: curricular assessment and previous experience, with the respective valuation of 60 and 40 out of a total of 100 values.

Composition of the selection Jury: Diogo Santos, Alberto Ferro, Biljana Sljukic.

Announcement/ notification of the results: The final evaluation results will be communicated to all applicants by email.

Deadlines and procedures of complaint and appeal. A complaint may be lodged from the final decision within 15 working days, or an appeal to the Executive Board of IST-ID within 30 working days, both counted from the respective notification

Application deadline and formalization: The call is open from May 8 until May 21, 2024.



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It is mandatory to formalize applications with the submission of the following documents: i) B1 Form – Fellowship application (<https://ist-id.pt/concursos/bolsas/>); ii) *Curriculum Vitae*; iii) academic degree certificate, where applicable; iv) proof of enrollment at a course that does not award an academic degree; v) motivation letter.

Applications must be submitted to the email: diogosantos@tecnico.ulisboa.pt



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