(BL189/2025-IST-ID)

Research Studentships for Master or Integrated Master students

Applications are open for two Research Studentships for Master or Integrated Master Students, within the framework of the SYAMESE project - Synergy between plasmas and separation membranes for sustainable CO2 conversion of *Associação do Instituto Superior Técnico para a Investigação e Desenvolvimento (IST-ID)*, 2023.15276.PEX, financed by national funds through FCT/MCTES (PIDDAC) under the following conditions:

Scientific Area: Plasma Physics and Nuclear Fusion (FIS-PLA)

Admission Requirements: *To be enrolled at an integrated master or a master.*

Workplan: The SYAMESE project consists of an in-depth numerical and experimental investigation of the dissociation of CO2 in plasma and the separation of its products, key processes for the storage of clean energy in synthetic fuels. The project aims to reveal the mechanisms underlying the interaction between the plasma and the separation membrane and to identify the optimum conditions for operating plasma-membrane reactors. The grants will allow each student to simulate the operation of different plasma reactors and their interaction with different surfaces and electrolytes through fluid modeling, acquiring valuable skills for the study of physics and engineering. Through numerical modeling, the fellows will also investigate the potential of coupling separation membranes to plasma to obtain the separate production of carbon monoxide and oxygen. The fellows will be able to carry out experimental measurements with collaborators at other institutions. Numerical simulation results can be validated against these experimental measurements and can complement their understanding. The research will address the fundamental mechanisms of the interaction between plasmas and this type of ion-conducting surface, an aspect yet to be explored in the scientific community, with a high potential impact in the field of plasma physics, catalysis and electrolysis. By carrying out cutting-edge research, the students will not only acquire crucial skills for their future, but also scientifically interesting results, the presentation and discussion of which will enable them to complete high-quality master's theses.

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 Institute for Plasmas and Nuclear Fusion (IPFN) under the scientific supervision of Doctor Pedro Viegas.

Duration: The research fellowship will have the duration of 9 months and is expected to begin in September 2025. The grant contract cannot be renovated. When the academic degree or diploma is awarded during the term of the scholarship contract, the scholarship can be completed under the contractual terms established.

Monthly maintenance allowance: According to the values for Research Fellowships awarded by FCT in Portugal (https://www.fct.pt/fct-atualizou-o-valor-das-bolsas-para-2025/), the amount of the monthly maintenance allowance is €1040,98, being the payment method of the Fellow by wire transfer.

Selection methods: The selection methods will be the following: curriculum evaluation, motivation letter and reference letters, classified on a scale from 1 to 5, with the respective weights of 40%, 30% and 30%. Preferential factor: experience in low-temperature plasma modelling, particularly fluid modelling and study of plasma interactions with surfaces.

Composition of the selection Jury: Pedro Viegas, Tiago Silva and Vasco Guerra

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

Time limits and procedures for prior hearings, complaints and appeals: Following communication of the provisional list of assessment results, candidates have a period of 10 working days in which to make their views known at the prior hearing of interested parties, under the terms of articles 121 et seq. of the Code of Administrative Procedure. The final decision will be handed down after analysis of the opinions presented at the prior hearing of interested parties. The final decision may be appealed to the Jury 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 July 29 until August 22, 2025.

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 an academic degree course (Master, Integrated Master); v) motivation letter.

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