

(BL230/2024-IST-ID)

Scientific Initiation Studentships

Applications are open for one Scientific Initiation Studentships, within the framework of project *PARADiSE – The plasma road to solar fuels* in *Associação do Instituto Superior Técnico para a Investigação e Desenvolvimento (IST-ID)*, 1801P.0119.1.01 PTDC/FIS-PLA/1616/2021, financed by national funds through FCT/MCTES (PIDDAC), under the following conditions:

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

Admission Requirements:

- a) *To be enrolled at a professional higher technical course, at a bachelor degree, at an integrated master or master degree, or to have a bachelor 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 units;*
- b) *not to exceed with this contract, including the possible renovations, an accumulated period of one year in this type of studentship, continuously or with interruptions;*
- c) *not to have held any other fellowship directly or indirectly funded by FCT.*

Workplan: The PARADiSE project consists of an in-depth theoretical, numerical and experimental investigation of the plasma decomposition of CO₂, a key step in the process of storing renewable energy in synthetic fuels. The project aims to reveal the mechanisms underlying the dissociation of CO₂ by plasma, identify the optimum conditions for operating the plasma reactor and produce a prototype. The grants will allow students to simulate the operation of the plasma reactor and its interaction with surfaces through fluid modeling, acquiring valuable skills for the study of physics and engineering. By numerical means, the students will also investigate the potential of coupling separation membranes to the plasma to obtain separate production of carbon monoxide and oxygen, a fundamental step towards the sustainable and economical production of clean fuels. The research will address the fundamental mechanisms of the interaction between plasmas and this type of 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.

Applicable legislation and regulations: Law no. 40/2004, of August 18 (Statute for Scientific Research Fellows), as amended by Decree-Law no. 123/2019, of August 28; IST-ID Research Fellowship Regulations, available at <https://ist-id.pt/concursos/bolsas/> ; FCT Research Fellowship Regulations, available at <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 November 2024. 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/wp-content/uploads/2024/02/Tabela-de-Valores-SMM_atualizacao-2024.pdf), the amount

of the monthly maintenance allowance is € 601,12, being the payment method an option of the Fellow by Wire Transfer/Check.

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 modelling 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 or to the President of IST-ID, within 15 working days of notification.

Application deadline and formalization: The call is open from September 30 until October 11, 2024.

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 or at a course that does not award an academic degree; v) motivation letter; vi) declaration on honour that the applicant does not exceed with this contract, including the possible renovations, an accumulated period of one year in this type of studentship, continuously or with interruptions, and has not held any other fellowship directly or indirectly funded by FCT.

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



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