

Research Studentships (for students of a course that does not award an academic degree)

Applications are open for 1 Research Studentship, within the framework of project SYAMESE – 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:

a) to hold a bachelor or 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 units;

b) not to exceed with this contract, including the possible renovations, an accumulated period of two years in this type of studentship, continuously or with interruptions.

Workplan: The dissociation of CO₂ in plasma and the separation of its products are key processes for the storage of clean energy in synthetic fuels and for the production of breathable oxygen on Mars as part of an in-situ resource utilization (ISRU) technology. This 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 grant will allow the researcher to simulate the operation of different plasma reactors and their interaction with different surfaces and electrolytes through fluid modelling, essential for understanding and optimizing the novel system. Through numerical modelling, the fellow will investigate the potential of coupling separation membranes to plasma to obtain the separate production of carbon monoxide and oxygen. They will also 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 fellow will not only acquire crucial skills for their future, but also scientifically interesting results, the presentation and discussion of which will have an impact on the broader international community of plasma physics, energy research and ISRU.

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://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 Dr. Pedro Viegas.

Duration: The research fellowship will have the duration of 3 months and is expected to begin in May 2026. The grant contract can be renovated.

Monthly maintenance allowance: According to the values for Research Fellowships awarded by FCT in Portugal, the amount of the monthly maintenance allowance is € 1359,64, 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 interview, classified on a scale from 1 to 5, with the respective weights of 40%, 30% and 30%. Preferential factor: experience in the areas of plasma physics, plasma-surface interaction and fluid modelling.



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

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 April 20 until May 4, 2026.

It is mandatory to formalize applications with the submission of the following documents: i) B1 Form – Fellowship application (<https://ist-id.pt/recursos-humanos/bolseiros/#documentos-relacionados>); 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; vi) declaration on honour that the applicant does not exceed with this contract an accumulated period of two years in this type of studentship, continuously or with interruptions.

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



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