

(BL227/2022-IST-ID)

Scientific Initiation Studentships

Applications are open for 1 Scientific Initiation Studentships, within the framework of project PARADISE 1801P.01119.1.01, **PTDC/FIS-PLA/1616/2021 - IST-ID** financed by national funds through FCT/MCTES (PIDDAC), under the following conditions:

Scientific Area: Plasma Physics and Nuclear Fusion

Admission Requirements: Student in Materials Engineering. Preferential factors: experience in (i) materials characterization and laboratory work, (ii) SEM, and (iii) samples preparation techniques.

Workplan: The LaSrCoFeO will be obtained through mechanical alloying and consolidation. The preparation of the membranes involve: milling at high energy, drying, sieving, calcination and sintering. Optimized parameters will be established iteratively as a function of the resulting densification of the materials. The existence of solid solutions as well as intermetallic compounds will be established by X-ray diffraction. Microstructural characterization of the powders and the consolidated materials will be performed by scanning electron microscopy (SEM) coupled with energy dispersive spectroscopy (EDS). In order to study the stability, oxygen permeation and stability to CO₂, annealing at 600°C and measurements of the permeability to O₂ will be performed.

Objectives:

- Produce and test ceramic membranes permeable of oxygen in a disc shape with a thickness of 1mm;
- Evaluate the perovskite (LaSrCoFeO) behavior to work at 600°C.
- To construct an installation for testing the membranes.
- Evaluate the stability and oxygen permeability on the membrane.

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 Instituto de Plasmas e Fusão Nuclear (IPFN) do Instituto Superior Técnico (IST) under the scientific supervision of Doctor Marta Dias and Doctor Nuno Pinhão.

Duration: The research fellowship(s) will have the duration of 6 months. It's expected to begin in January of 2023 and cannot be renewed.

Monthly maintenance allowance: According to the values for Research Fellowships awarded by FCT in Portugal (<http://www.fct.pt/apoios/bolsas/valores>), the amount of the monthly maintenance allowance is 486,12 €, being the payment method an option of the Fellow by Wire Transfer/Check.

Selection methods: The selection methods will be the following:

1. Curricular Evaluation (50%)
2. Interview (25%)
3. Experience in SEM and samples preparation (25%).

Composition of the selection Jury: Marta Dias (mec 46980), Nuno e Vasco Guerra

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 November 11 until November 24, 2022.

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: Carla.reis@ist.utl.pt