

## **Research Fellowship in Electric Propulsion**

### **Directorate of Technical and Quality Management**

### **ESTEC, Noordwijk, The Netherlands**

### **ESA/RF-ESTEC(2015)020**

#### **Overview of the Division's mission**

The Propulsion and Aerothermodynamics Division is responsible for project support and technology development for space application for all what concerns propulsion for spacecraft and launchers (essentially chemical and electric, but more advanced propulsion concepts investigated) and aerothermodynamics (tools, including experimental, numerical and physical modeling for internal and external flows applicable to re-entry, launchers and propulsion systems). The Division is supported by a propulsion laboratory (activities in electric and chemical propulsion) and a computational facility.

#### **Overview of the field of research proposed**

The ESA propulsion lab host experimental activities related to the test of space propulsion systems capable to fulfil all the spacecraft requirements on propulsion. Analytical and experimental tools are used to understand the physics of the propulsion systems in order to better design engines capable to achieve the propulsion requirements imposed by space missions.

ESA/non-ESA studies aiming to assess the possibility of extending LEO mission's duration and of lowering the altitude identified the mass of propellant required to perform drag compensation manoeuvres as the major limiting factor.

The ESA Ram-EP CDF study, supported by ESA's General Studies Programme, concluded proposing an innovative solution to enable those type of LEO missions: collecting from the atmosphere the molecules causing the drag and use them to propel Electric Propulsion Thrusters (HET, GIÉ).

Theoretically Electric Propulsion thrusters, conventionally propelled with Xenon, can be operated with virtually any gaseous propellant, including oxygen and nitrogen.

The proposed activity aims to verify the performances models used when the electric thruster is operated with particles collected from the atmosphere and the assessment of the whole collection and storage if necessary together with the propulsion system.

The candidates need to have a good experience on electric propulsion design and testing.

### **Who can apply**

The programme is open to suitably qualified women and men. Preference will be given to applications submitted by candidates within five years of receiving their PhD.

The Research Fellow Programme is open to nationals of the following states: Austria, Belgium, the Czech Republic, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, the Netherlands, Norway, Poland, Portugal, Romania, Spain, Sweden, Switzerland, and the UK, or Canada as a Cooperating State, Bulgaria, Estonia, Hungary, Latvia, Slovakia and Slovenia as European Cooperating States (ECS).

### **Required qualifications**

Applicants must have recently completed their PhD studies in physics, electrical, aeronautical or mechanical engineering.

Applicants should have good analytical and communication skills and should be able to work in a multi-cultural environment in an autonomous manner.

Applicants must be fluent in English and/or French, the working languages of the Agency. A good proficiency in English is required.

### **How to Apply**

Please fill in the [online](#) application form attaching to it, **in one document only**, your CV, your motivation letter and your research proposal.

Candidates must also arrange for up to **three letters of reference** to be sent by e-mail, before the deadline, to **temp.htr@esa.int**. The letters must be sent by the referees themselves. The candidate's name must be mentioned in the subject of the email.

Applications satisfying the general conditions for eligibility, to be submitted **by 6 May 2015**, will be evaluated and successful applicants will be invited for an interview.

Interested candidates are highly encouraged to visit the ESA website: [www.esa.int](http://www.esa.int).