

Job Title: Internal Research Fellow (PostDoc) Lunar in-situ resource utilisation preparation

Req ID 5121 - Posted 22/01/2018



EUROPEAN SPACE AGENCY

Research Fellowship Opportunity in the Dir of Human & Robotic Exploration Programmes.

ESA is an equal opportunity employer, committed to achieving diversity within the workforce and creating an inclusive working environment. Applications from women are encouraged.

Post

Internal Research Fellow (PostDoc) Lunar in-situ resource utilisation preparation

This post is classified F2.

Location

ESTEC, Noordwijk, The Netherlands

Our team and mission

The Lunar Lander Team in the Directorate of Human and Robotic Exploration is leading the development of ESA's contributions to the Russian led Luna-Glob (Luna 25), Luna-Resurs Orbiter (Luna 26) and Luna Resurs Lander (Luna 27) missions. These contributions include the PILOT precision landing and hazard avoidance system, the SPECTRUM communications and operations service and the PROSPECT package to assess the resource potential of lunar regolith, including polar cold trapped ice, whilst addressing major questions for lunar science.

The team is responsible for the development, delivery and operation of ESA's contribution, coordinating the interfaces with Russia and working with European industry and the science community. Through the implementation of these missions the team is generating knowledge, technology and expertise to prepare for ESA's involvement in future exploration missions and the potential exploitation of lunar resources.

The Strategy and Innovation Team in the Directorate of Human and Robotic Exploration supports the development, evolution and implementation of ESA's exploration strategy and manages the benefits resulting from ESA's space exploration activities. This includes supporting international space exploration for a, including the international Space Exploration Coordination Group (ISECG), and supporting the development of new partnerships and governance schemes. The Team also works to implement new innovation partnerships with commercial space and non-space sectors for activities related to exploration of the Moon, Mars and Low Earth orbit whilst seeking to increase commercial and industrial utilisation of the International Space Station.

In the area of space resources the Strategy and Innovation Team leads a number of activities to prepare for the potential future implementation of ISRU. These include technology development and mission studies, coordinated at international level and leveraging commercial partnerships. These activities are being performed with a view to performing an ISRU demonstration at the lunar surface in advance of implementation in future human lunar missions.

Interested candidates are encouraged to visit the ESA website: www.esa.int

Field(s) of activities/research

A Research Fellow is sought to engage in independent research that supports preparations for the future utilisation of lunar resources. An emphasis is placed on the potential utilisation of cold trapped lunar volatiles, including water ice, and the chemical reduction of lunar minerals. The research to be performed should be related to one or more of the following:

- lunar resource prospecting through in-situ measurements and remote sensing
- laboratory analysis of lunar materials
- lunar regolith excavation, handling and beneficiation
- handling and preservation of ices in the lunar environment
- resource extraction or processing

The Research Fellow will be based at ESA ESTEC (http://www.esa.int/About_Us/ESTEC), and will work closely with the both Lunar Lander Team and Strategy and Innovation Team in the Directorate of Human and Robotic Exploration. The role of the Fellowship and research performed is to support In-Situ Resource Utilisation aspects of ESA's exploration activities, including the PROSPECT resource analysis package on Luna-27 (<http://exploration.esa.int/moon/59102-about-prospect/>) and future mission studies and technology developments. The research will be targeted at work that supports the integration of these activities into an overall strategy for ISRU. This is likely to involve working closely with different groups within ESA, science and technology research communities in academia and the private sector.

Where needed, access to laboratories or research facilities, in particular those existing within ESA-ESTEC, and resources needed to support research activities may be agreed on a case by case basis.

Technical competencies

Knowledge relevant to the field of research

Research/publication record

Ability to conduct research autonomously

Breadth of exposure coming from past and/or current research/activities

Interest in space and space research

Ability to gather and share relevant information

Behavioural competencies

Innovation & Creativity

Continuous Learning

Communication

Relationship Management

Self Motivation

Problem Solving

Cross-Cultural Sensitivity

Education

Applicants should have completed, or be close to completion of a PhD in a related technical or scientific discipline or have equivalent demonstrated research experience.

Additional requirements

Applicants will be required to demonstrate competency in the specific skills required to perform the proposed research (e.g. laboratory skills, measurement and analysis, programming etc.). Candidates are expected to have research experience in at least one of the below areas:

- Lunar or planetary geology, or cosmochemistry
- Analyses techniques and instrumentation
- Technology development
- Chemical processes engineering
- Mining or resource engineering
- In-situ resource utilisation on planetary bodies
- Space mission development and architectures

Applicants are required to be able to demonstrate an ability to work in a multidisciplinary environment as part of diverse teams. A proactive approach to identifying opportunities, problem solving and communicating is required.

The working languages of the Agency are English and French. A good knowledge of one of these is required. Knowledge of another Member State language would be an asset.

Specificities

For this Research Fellow opportunity, interviews will include a presentation of the proposed research and may include meetings with the ESA team, discussions about the proposed research and visits of relevant facilities located at ESTEC.

A wide range of laboratories and facilities are available at ESA ESTEC (see for example http://www.esa.int/Our_Activities/Space_Engineering_Technology/Laboratories), which could be made available for the research if needed. Access to facilities and the availability of other resources to support the proposed research will be discussed and determined on an case by case basis, based on the needs of the specific research proposed and the availability of the required facilities.

Other information

For behavioural competencies expected from ESA staff in general, please refer to the [ESA Competency Framework](#).

The Agency may require applicants to undergo selection tests.

The closing date for applications is 18 February 2018.

In addition to your CV and your motivation letter, please add your proposal of no more than 5 pages outlining your proposed research in the "additional documents" field of the "application information" section. Candidates are asked to arrange for 3 reference letters, to be sent by the referees themselves, before the closing date to temp.htr@esa.int. Please ensure your name is mentioned in the subject of the e-mail.

If you require support with your application due to a disability, please email contact.human.resources@esa.int.

Please note that applications are only considered from nationals of one of the following States: Austria, Belgium, the Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Luxembourg, the Netherlands, Norway, Poland, Portugal, Romania, Spain, Sweden, Switzerland, the United Kingdom and Canada and Slovenia as well as Bulgaria, Cyprus, Latvia, Lithuania, Slovakia as European Cooperating States (ECS).

Priority will first be given to candidates from under-represented Member States.

In accordance with the European Space Agency's security procedures and as part of the selection process, successful candidates will be required to undergo basic screening before appointment