

Research Fellowship on Lunar in-situ resource utilisation preparation

Directorate of Human Spaceflight and Robotic Exploration Programmes

ESTEC, Noordwijk, The Netherlands

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Overview of the Lunar Exploration Office

The Lunar Exploration Office in the Directorate of Human Spaceflight and Robotic Exploration leads the initiation and implementation of near to medium term lunar exploration mission studies, technology development and flight projects. Current activities include the development of a drilling sampling and sample analysis system and precision landing and hazard avoidance system for the Russian led mission Luna-27. These activities are defined to generate knowledge, technologies, expertise, capabilities and partnership to prepare for future human lunar exploration; whilst creating new opportunities for fundamental scientific research.

Overview of the field of research proposed

A research fellow is sought to engage in independent research in preparation of future lunar exploration in the area of the analysis of lunar materials and the utilisation of in-situ resources. An emphasis is placed on the potential utilisation of cold trapped lunar volatiles and the thermochemical extraction of water and oxygen from lunar materials.

The research fellow will work closely with the lunar exploration office, to establish how flight projects in development by ESA, in particular the PROSPECT resource analysis package, might be best employed to address knowledge gaps for future resource utilisation. This will involve working closely with ESA teams and external users to perform multidisciplinary research. This research will bring together elements of planetary science and cosmochemistry with future technology needs and developments.

Another important aspect of the work will be to create research links with other areas of the Human Spaceflight and Robotic Exploration Directorate in areas including:

- identifying how resource related research can support strategic planning,
- supporting the establishment of technological and operational concepts for the utilisation of in situ resources with the European Astronaut Centre,
- Supporting the establishment of new analogue and sample curation capabilities.

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, Estonia, Finland, France, Germany, Hungary, Greece, Ireland, Italy,

Luxembourg, the Netherlands, Norway, Poland, Portugal, Romania, Spain, Sweden, Switzerland, and the UK, Slovenia as an Associate Member or Canada as a Cooperating State, Bulgaria, Cyprus, Latvia, Lithuania, Slovakia as European Cooperating States (ECS).

Required Qualifications

Applicants should have recently completed, or be close to completion of a PhD in a related technical or scientific discipline. Candidates should have research experience in areas related to the proposed research. For example, lunar or planetary geology and cosmochemistry, sample analyses, resource extraction processes and technologies, space mission development and architectures.

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.)

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.

How to Apply

Please fill in the [online](#) application form attaching to it, in one document only, your CV, your motivation letter and a proposal of no more than 5 pages outlining your proposed research. Dependencies for conducting the research (e.g. access to specific facilities) should be identified and justified along with a description of how these dependencies should be addressed (e.g. is access for facilities already granted, are any proposals required or is ESA expected to address the dependencies)

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 9 June 2017, 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.