

Job Title: Internal Research Fellow (PostDoc) in Exploration Mission Analogues Research and Development

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EUROPEAN SPACE AGENCY

Research Fellowship Opportunity in the Directorate 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) in Exploration Mission Analogues Research and Development

This post is classified F2.

Location

ECSAT, Harwell, United Kingdom

Our team and mission

The Research Fellow will be based in the Studies and Technologies (ExPeRT) Team, Directorate of Human and Robotic Exploration Programmes.

E3P (European Exploration Envelope Programme) defines the European Space Agency's new exploration programme following its ministerial meeting of November 2019. E3P is based on four cornerstones, addressing Humans in Low-Earth Orbit, Humans beyond Low-Earth Orbit, Lunar Robotic and Mars Robotic. These four cornerstones are supported by two transversal programmes, ExPeRT (Exploration Preparation, Research and Technology) and SciSPACE (Science in Space Environment).

ExPeRT will in particular develop future exploration technology and prepare new human and robotic exploration projects for decision at ESA's 2022 Ministerial.

The use of planetary surface analogues (particularly rocks and soils) is required for many ongoing and future activities. ESA2C (ESA Exploration Sample Analogue Collection) was created to meet this need. The collection brings together a certain number of naturally occurring analogues (mainly originating from quarries) for Mars, Phobos or the Moon (Moon analogues also exist at EAC, the European Astronaut Centre).

The SACF (Sample Analogue Curation Facility), located on the Harwell campus, is in charge of ESA2C and aims to be a centre of expertise for all ESA activities relying on the definition, development and procurement of analogues. Applications of planetary analogue materials include robotics, ISRU (In-Situ Resource Utilisation) and scientific research. The SACF features analytical, sample preparation, development and curation capabilities, complemented by state-of-the-art analytical facilities on the Harwell campus. You will research and design new methods of creating planetary surface simulants to aid the development of new/existing ESA missions, and to expand the range of analogues and simulants available in the ESA2C collection. The successful candidate will also contribute to the development of the SACF, and support ESA mission teams where appropriate.

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

Field(s) of activities/research

You will work on the following:

- (a) Research on new analogues for present and future missions
 - Icy analogues for future lunar missions, focusing on ISRU uses (e.g. volatile extraction)
 - Simulated agglutinates to improve new/existing lunar simulants
 - Geotechnical simulants for terrain/traversability applications (particularly for Mars)
 - Dedicated mixtures of existing materials to create new, customised simulants
- (b) Support the operation and expansion of ESA2C and related curation facility
 - Requests related to ESA2C (i.e. to the scientific community and public outreach)
 - Curatorial duties incorporating addition and acquisition of new samples entering the ESA2C and facilitating loans of samples to investigators
 - Addition of new analytical capabilities
- (c) Support ExPeRT activities requiring or generating analogues, field tests:
 - Request and advise on analogue materials
 - Advise on best location for field tests for target applications

- Participation in field trials (ExoFit, etc.) as geological expert and in order to ensure proper analogue collections for ESA2C
 - Review of relevant documentation from technology development activities
 - Participation in workshops and meetings when applicable.
- (d) Sample-receiving facility technologies:
- Support any ongoing technology development activity (such as Double Wall Isolator, Remote manipulation system) by providing hands-on geologist expertise for sample manipulations
 - Further develop test programme after delivery and installation of the prototypes on campus
 - Provide expert feedback to improve the system and contribute to the overall definition of a European sample-receiving facility
 - Support research on telemanipulations/teleoperations of samples using the SACF robotic arm (to be delivered in Q3 2020).

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
 General 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

You should have recently completed, or be close to completion of a PhD in a related technical or scientific discipline. Preference will be given to applications submitted by candidates within five years of receiving their PhD.

Additional requirements

The following in particular is required for this position: expertise in geology or a related field. Laboratory experience in characterisation of physical, chemical and mineralogical properties of geological materials is required. Recognised experience in planetary sciences (Mars, Moon, Phobos) and/or curation process is a considerable asset.

Specificities

The Research Fellow will be part of a small team within the SACF. You should therefore be able to work highly autonomously in a diverse, multicultural environment and take a pragmatic approach to problems. A demonstrated ability to think outside the box, an innovative mind and intellectual curiosity about different engineering and scientific domains are critical to this role. The ability to initiate new ideas is also key to the position.

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 01 April 2021.

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.

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, and the United Kingdom. Nationals from Latvia and Slovenia, as Associate Member States, or Canada as a Cooperating State, can apply as well as those from Bulgaria, Cyprus, Lithuania and 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