Job Title: Internal Research Fellow (PostDoc) in Materials' Physics and Chemistry

Req ID **9129** - Posted **13/01/2020**

EUROPEAN SPACE AGENCY

Research Fellowship Opportunity in the Directorate of Technology, Engineering and Quality.

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 Materials' Physics and Chemistry
This post is classified F2.

Location

ESTEC, Noordwijk, The Netherlands

Description

The Materials Physics & Chemistry Section operates state-of-the-art space simulation facilities (vacuum, temperature, contamination, atomic oxygen, electromagnetic and particle radiation) as well as instruments to characterise the physical and chemical properties within the Materials & Electrical Components Laboratory. It provides quality and engineering support to all ESA projects and development programmes for materials physics and chemistry, associated processes and environmental effects.
Activities performed in the lab cover physical analysis and characterisation of materials and associated processes, chemical analysis and characterisation of materials and associated processes, cleanliness and contamination control, environmental evaluation and assessment of degradation effects, performance prediction and verification of materials and associated processes.

Field(s) of activities/research

Environmental effects on materials are mostly detrimental and it is extremely important to understand the degradation mechanisms for both individual and synergistic effects in order to predict the long-term performance and ensure it is reliably within the margins required by the mission.

Translating the effects of degraded properties into performance loss for a subsystem or equipment item is not always a trivial task, and we are sometimes obliged to formulate assumptions and recreate test set-ups that are too conservative, considering that missions and designs are becoming more and more challenging, requiring lower and lower margins.

The aim of the proposed activity is to perform an in-depth study of the mechanisms of materials degradation under environmental effects and their direct/indirect impact on the associated performance loss. You will be asked to develop testing and modelling techniques to support the study.

For this you will use the abovementioned state-of-the-art laboratory offering facilities which simulate the space environment, including thermal aging, thermal cycling, UV and particle radiation, atomic oxygen and outgassing. The properties of exposed materials will be analysed using a variety of techniques: thermal analysis, microscopy (optical, AFM, SEM), surface analysis (TOF-SIMS, XPS, Raman and Fourier-transform infrared spectroscopy, contact angle).

Technical competencies

Ability to conduct research autonomously

Breadth of exposure coming from past and/or current research/activities
Research/publication record
Knowledge relevant to the field of research
General interest in space and space research
Ability to gather and share relevant information

Behavioural competencies

Innovation & Creativity
Continuous Learning
Self Motivation
Communication
Problem Solving
Relationship Management
Cross-Cultural Sensitivity

Education

You should have recently completed, or be close to completing, a PhD in a related technical or scientific discipline, preferably in materials science, materials physics/chemistry, materials engineering or applied physics. Preference will be given to candidates awarded their doctorate within the past five years.

Additional requirements

You should have good analytical skills and a good understanding of materials analysis techniques. An ability to perform experimental work in the laboratory and a knowledge of the space environment would be assets.
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.

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 10 February 2020.

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 Slovenia, as an Associate Member, or Canada as a Cooperating State, can apply as well as those from Bulgaria, Cyprus, Latvia, 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