

Internal Research Fellow (PostDoc) in Experimental Structure Performance Evaluation of Materials

Job Req ID: 12386

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Vacancy Type: Permanent

Date Posted: 07 April 2021

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. For this purpose, we welcome applications from all qualified candidates irrespective of gender, sexual orientation, ethnicity, beliefs, age, disability or other characteristics. Applications from women are encouraged.

This post is classified F2.

Location

ECSAT, Harwell, United Kingdom

Description

The Internal Research Fellow will be based in the Materials & Processes Section, Structures, Mechanisms & Materials Division, Mechanical Department, Directorate of Technology, Engineering & Quality.

The materials and processes used for space hardware manufacturing present very specific challenges and limitations. The ever-present need for low mass must be met while ensuring very high performance and reliability of the final product with no repair or maintenance options. Often small, complex geometries for operating in highly demanding mission environments are necessary.

The industrial transition to Industry 4.0 is introducing smart production capabilities through digitalisation and automation, enabling agility to react quickly to market needs and giving rise to unprecedented design solutions (e.g. additive manufacturing), as well as optimisation of cost, performance, and time to market. Another important trend is the increasing utilisation of Commercial Off-The-Shelf solutions, that require cost-effective, rapid performance evaluation and qualification.

In order not to compromise this agility through extensive, resource-intensive testing and qualification, structure-property relations need to be explored more fundamentally.

The objective of this activity is to experimentally study structure/performance relationships for space-relevant materials and processes, especially:

- Powder bed additive manufacturing processes: the influence of powder characteristics and process parameters on final parts performance.
- Characterisation of Pb-free solder alloys: creep, stress relaxation, temperature dependencies, formation of inter-metallic compounds on different PCB finishes and their impact on long-term reliability.
- Liaising with ICME experts to provide input parameters for predictive computational modelling.

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

Field(s) of activity/research

- Novel powder characterization techniques

- Powder bed additive manufacturing
- NDI
- Static and dynamic mechanical analysis
- Thermomechanical analysis
- Metallography
- Experimental model verification

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

- Result Orientation
- Operational Efficiency
- Fostering Cooperation
- Relationship Management
- Continuous Improvement
- Forward Thinking

Education

Applicants should have recently completed, or be close to completion of, a PhD in materials science or equivalent. Preference will be given to candidates awarded their doctorate within the past five years.

Additional requirements

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.

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.

At the Agency we value diversity and we welcome people with disabilities. Whenever possible, we seek to accommodate individuals with disabilities by providing the necessary support at the workplace. The Human Resources Department can also provide assistance during the recruitment process. If you would like to discuss this further please contact us at 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