

# Materials' Physics and Chemistry Engineer

**Job Req ID:** 12165

**Closing Date:** 16 July 2021

**Publication:** Internal & External

**Vacancy Type:** Permanent

**Date Posted:** 18 June 2021



## **EUROPEAN SPACE AGENCY**

Vacancy 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.

### **Post**

#### **Materials' Physics and Chemistry Engineer**

This post is classified A2-A4 on the Coordinated Organisations' salary scale.

### **Location**

ESTEC, Noordwijk, The Netherlands

### **Description**

Materials Physics and Chemistry Engineer in the Materials Physics and Chemistry Section, Technical Reliability and Quality Division, Product Assurance and Safety Department, Directorate of Technology, Engineering and Quality.

The Materials Physics and Chemistry Section provides functional support to ESA projects and carries out technological research (R&D) in the fields of Materials Physics and Chemistry, associated processes and environmental effects.

The Section supports project-specific activities in the selection, characterisation, verification, approval and application of metallic and non-metallic materials & processes for ESA programmes with a focus on the process and environmental verification. Environmental verification covers the ground as well as the space environment.

### **Duties**

Reporting to the Head of Section and within the technical fields described above, your main tasks and responsibilities will include:

- providing expert technical support and consultancy to ESA projects, programmes and general studies in the field of materials physics and chemistry throughout all project

- phases, with a focus on the verification of the manufacturing processes, logistics and space environment compatibility, including the effects on the physical and chemical properties of the product impacting the space system reliability and life expectancy;
- ensuring materials and processes and sub-assemblies are compatible with mission requirements in terms of space and ground environmental effects (vacuum, temperature, contamination, etc.) as well as with storage and launcher requirements;
  - participating in feasibility studies, project reviews and evaluations of procurement proposals;
  - supporting project-specific activities in the selection, characterisation, verification, approval and application of metallic/non-metallic materials and processes for ESA programmes, focusing on materials physics & chemistry, critical processes and environmental effects;
  - identifying critical development problems and assisting in their resolution via e.g. NRBs, auditing, etc.;
  - coordinating and supporting non-conformance investigations and failure analysis in the required fields of competence above;
  - developing and implementing procedures for new laboratory test methods and materials analysis techniques with a focus on the characterisation of physical and chemical properties and environmental effects; this includes analysing future mission requirements (in cooperation with the Space Environment and Effects Section for the definition of the mission environments) and preparing appropriate evaluation techniques as well as predictive modelling;
  - contributing to the definition and implementation of technology development requirements and work plans for the Agency's technology programmes;
  - defining, initiating and managing R&D activities covering both long- and short-term needs;
  - contributing to implementation of Agency-wide initiatives such as CleanSpace, Space & Energy, etc., focusing on materials' physics & chemistry, associated processes and environmental effects;
  - supporting and contributing to the establishment and implementation of requirements, handbooks and standards regarding space materials (Q-70 series) in the domain of competence;
  - maintaining and developing ESA's competence in materials physics & chemistry, associated processes and environmental effects, promoting achievements and concepts through conferences, workshops and training;
  - fostering new application areas for multidisciplinary activities, placing emphasis on innovative concepts, cutting-edge technologies and system architectures;
  - laboratory activities, as required;
  - monitoring applicable scientific and technological trends and maintaining state-of-the-art expertise;
  - contributing to the dissemination of the results of the activities performed and the transfer of knowledge across the Agency.

Duties may also include supporting other activities within your field of competence.

### **Technical competencies**

- General background and specific experience in the technical domains covered by the position
- Understanding of related technologies, R&D trends and the industrial landscape
- Project support experience in technical domains covered by the position
- Spacecraft systems knowledge and materials engineering aspects for space missions
- Hands-on laboratory experience with characterisation techniques aimed at evaluating physical and chemical properties and environmental effects on materials and related processes
- Proven experience in establishing and executing complex test plans as well as setting up and performing predictive modelling and correlation analyses, this also requires

experience in discussing with customers their needs and in translating them into test requirements and goals

- Experience in the preparation of procurement activities for technology development and innovation (statements of work, proposal evaluation, etc)
- Experience in the management and monitoring of industrial activities, including participation in reviews
- Experience with materials & processes engineering and quality standards, possibly including their preparation and implementation

### **Behavioural competencies**

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

### **Education**

A Master's degree in materials science or engineering, materials physics or chemistry, applied physics or similar field related to the position is required.

### **Additional requirements**

Understanding of how materials and their associated processes are affected by the environment (ground and space) and how test methods are developed to characterize such effects is required.

Familiarity and knowledge of environmental modelling software like SPENVIS is an asset.

### **Other information**

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

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. The Agency may require applicants to undergo selection tests.

### **The closing date for applications is 16 March 2021.**

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](mailto:contact.human.resources@esa.int).

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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, Latvia and Slovenia.

According to the ESA Convention the recruitment of staff must take into account an adequate distribution of posts among nationals of the ESA Member States. When short-listing for an interview, priority will first be given to internal candidates and secondly to external candidates from under-represented Member States.  
(<https://esamultimedia.esa.int/docs/careers/NationalityTargets.pdf>)

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.

Recruitment will normally be at the first grade in the band (A2); however, if the candidate selected has little or no experience, the position may be filled at A1 level.