**Training Opportunity for Portuguese Trainees**

| Reference | Title | Duty Station |
|---|---|---|
| **PT-2017-TEC-QTE** | **Space Environmental testing and qualification of materials** | **ESTEC** |

**Overview of the unit's mission:**

The Components Technology and Space Materials Division provides technical support to ESA missions and the European Space Industry in the fields of materials, processes and electronic components. Support is given directly to projects in the form of technical advice, PA support and investigating failures and non-conformances. Indirect support is provided by characterising and validating the use of materials and verifying processes in the space environment as well as directing research and development programmes for technologies that will be of use in future missions. This activity is proposed for the Materials Space Evaluation and Radiation Effects of ESA which is analysing the behaviour of materials and subassemblies for ESA's future space missions. A state of the art laboratory is available to carry out that research covering space simulation facilities as well as materials analysis techniques.

**Overview of the field of activity proposed:**

The proposed activity involves the environmental testing and analysis of materials proposed for ESA's future space missions. Specifically we would like to assess new and novel thermal control (insulation materials) for deep space missions.

Such missions put extreme requirements on materials as we often enter unchartered territory. As thermal insulation materials are often the "outer skin" of a spacecraft there is nothing to hide behind and they need to resist the various components of the space environment.

The candidate will use the Materials and EEE Laboratory which is a state of the art lab comprising facilities to simulate the space environment, including thermal ageing, thermal cycling, UV/particle radiation, atomic oxygen and outgassing. The properties of the exposed materials will be analysed using a variety of techniques, such as thermal analysis, thermal conductivity, flexural properties, microscopy (optical and SEM), surface analysis (XPS, Raman spectroscopy, FTIR, contact angle) and mechanical analysis. Data from this activity will be used to support the continued improvement and optimization production and predictive analysis techniques for thermal control materials.

**Required education:**

Applicants should have completed a University course at Masters Level (or equivalent) in materials science, applied physics, applied chemistry, materials physics/chemistry.

Applicants should have good interpersonal and communication skills and should be able to work in a multi-cultural environment, both independently and as part of a team. Hands-on experience within a laboratory environment is considered an asset.

Applicants must be fluent in English and/or French, the working languages of the Agency. A good proficiency in English is required.

Specific requirements:

- good understanding of materials analysis techniques (microscopic analysis, chemical & spectroscopic, surface analysis (SEM, XPS, AFM etc)
- ability to perform experimental work in laboratory
- knowledge of the space environment