# Training Opportunity for Irish Trainees

| Reference | Title | Duty Station |
|---|---|---|
| **IE-2017-EOP-GTS(1)** | **Earth Observation Data Management Engineer** | **ESRIN** |

## Overview of the unit's mission:

The Ground Segment and Mission Operations Department (EOP-G) is responsible for the management, design, coordination and operation of the ESA Earth Observation (EO) payload data ground segment infrastructure and non-ESA missions, and for the Phase E management of the ESA missions. The EO Payload Data Ground Segment (PDGS) is made up of systems deployed at a number of facilities dedicated to the acquisition, archiving, processing and dissemination of data from EO Missions.

In order to operate and maintain the PDGS, EOP procures services from Facility Operators. The PDGS operations and maintenance are carried out to fulfil the achievement of EO mission objectives as expressed in relevant mission plans, and namely the operations management of the end-to-end data flow from user requests to delivery of data and products.

## Overview of the field of activity proposed:

Training opportunities can be offered in domains relevant to the services necessary to satisfy the operational needs of data exploitation for EO missions: Catalogue Management, Archive and Dissemination, Web Platforms and Exploitation platform.

ESRIN is responsible of producing and distributing earth observation data and information to the technical and scientific earth observation communities. This is achieved by exposing externally the ESA EO Web Sites and building internal services necessary to support the acquisition, production, archival, discovery and dissemination of data.

Today EO missions are disseminating data using common services and when needed ad hoc solution covering specialised community of users. The consumer of the data is requiring more and more a online availability of data and prompt response to emerging needs.

The candidate shall analyse the current process managed by ESA for product dissemination and identify emerging needs in terms of user interface for discovery and access. Results coming from past user surveys and requirement collection from mission specialists/authorities can be integrated, together with knowledge about other organisations and industry market.

The result of this analysis shall be used by ESA for identification of data access service evolution (with major emphasis on the deployment of catalogues and web information pages), that is currently subject to major evolution. The candidate shall support the data access service manager in ensuring coherent evolution of existing services and response to user needs.

In particular, the candidate shall support the definition and implementation of:

- new systems, services or functionality satisfying new and future needs;
- an optimised set of discovery and catalogue tools for an effective response to user requests and in line with ESA data policy (based on the OpenSearch standard);
- a modular layer for data management compliant with OGC standards (WCS, WMS, WMTS);
- Standards and guidelines facilitating Earth Observation data discovery (e.g. by third-party portals)

Keywords: Earth Observation Science, Data Discovery and Access

## Required education:

Applicants should have just completed, or be in their final year of a University course at Masters Level (or equivalent) in a technical or scientific discipline. In addition, applicants shall be familiar with data management, discovery, visualisation and dissemination.

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.

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

# Training Opportunity for Irish Trainees

| Reference | Title | Duty Station |
|---|---|---|
| **IE-2017-EOP-GTS(2)** | **Earth Observation Information Engineer** | **ESRIN** |

## Overview of the unit's mission:

The Ground Segment and Mission Operations Department (EOP-G) is responsible for the management, design, coordination and operation of the ESA Earth Observation (EO) payload data ground segment infrastructure and non-ESA missions, and for the Phase E management of the ESA missions. The EO Payload Data Ground Segment (PDGS) is made up of systems deployed at a number of facilities dedicated to the acquisition, archiving, processing and dissemination of data from EO Missions.
In order to operate and maintain the PDGS, EOP procures services from Facility Operators. The PDGS operations and maintenance are carried out to fulfil the achievement of EO mission objectives as expressed in relevant mission plans, and namely the operations management of the end-to-end data flow from user requests to delivery of data and products.

## Overview of the field of activity proposed:

Training opportunities can be offered in domains relevant to the services necessary to satisfy the operational needs of data exploitation for EO missions: Catalogue Management, Archive and Dissemination, Web Platforms and Exploitation platform.
ESRIN is responsible of producing and distributing earth observation data and information to the technical and scientific earth observation communities. This is achieved by exposing externally the ESA EO Web Sites and building internal services necessary to support the acquisition, production, archival, discovery and dissemination of data.
Today EO missions are disseminating data using common services and when needed ad hoc solution covering specialised community of users. The consumer of the data is requiring more and more online availability of data and prompt response to emerging needs. In addition to this, the user community is exposed to much larger information availability than in the past. Very often the success of a discovery activity relies on the tools used more than a manual or exhaustive analysis of all the possible results. It is becoming urgent to provide information consumers with mechanism to easily and quickly access to the relevant and most suitable information, most of the time reacting to natural language queries.
The candidate shall analyse the current information base of ESA, the knowledge and information type stored and the current mechanism for advertising and disseminating it. The knowledge of the current context together with the understanding of the emerging means available (e.g. natural language search, indexing vs machine learning, human computer interaction) shall define a evolution strategy for the current ESA information services and tools.
The result of this analysis shall be used by ESA in the current goal of evolving web information pages and enlarge user audience. The candidate shall support the data information service manager in ensuring coherent evolution of existing services and response to user needs.
In particular, the candidate shall support the definition and implementation of:

- new systems, services or functionality satisfying new and future needs;
- an optimised architecture of web portals for an effective response to user requests and in line with ESA data policy;
- tools facilitating user experience, like natural languages search or human interaction.

Keywords: Earth Observation Science, Data Information

## Required education:

Applicants should have just completed, or be in their final year of a University course at Masters Level (or equivalent) in a technical or scientific discipline. In addition, applicants shall be familiar with information management, sharing, discovery, visualisation and dissemination.
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.
Applicants must be fluent in English and/or French, the working languages of the Agency. A good proficiency in English is required.

# Training Opportunity for Irish Trainees

| Reference | Title | Duty Station |
|---|---|---|
| **IE-2017-HRE-AG** | **Spaceship EAC Project** | **EAC** |

## Overview of the unit's mission:

Within the Directorate of Human Spaceflight and Robotic Exploration, the European Astronaut Center (EAC) at Cologne, Germany, hosts the European astronaut corps and is responsible for astronaut training and astronaut medical operations. In order to prepare for future (human) space exploration missions, EAC created the "Spaceship EAC" project, which aims at developing technologies and concepts relevant for exploration on the Moon. The utilization of EAC as a test bed for exploration related technologies and operations is increasingly being undertaken. Concepts demonstrated within Spaceship EAC and the network of institutions involved can lead to such ideas being injected into larger funding ecosystems for TRL development.
The implementation of related projects is often done in cooperation with institutes of the German Aerospace Center (DLR), which has its headquarters and major facilities surrounding the EAC in Cologne, and with other external European partners which are part of the Spaceship network.

## Overview of the field of activity proposed:

The focus of the proposed National Trainee activity is to support EAC activities within the frame of the "Spaceship EAC" initiative in particular in the area of future mission technology demonstration utilising computational simulation and Machine Learning approaches. These activities are in line with future exploration roadmaps and exploration scenarios, and will leverage the particular experience of human spaceflight operations that EAC maintains. The National Trainee activities will encompass:

- Familiarisation with the "Spaceship EAC" project and - as far as relevant – with ESA's exploration technology programme;
- Development of projects relating to current on-orbit and future exploration concepts with the inclusion of Machine Learning optimisation approaches
- Support and lead EAC software development activities in model based system engineering techniques
- Investigate the use cases for machine learning techniques to the tasks of astronaut schedule optimisation for on orbit and future exploration scenarios
- Investigate use of expert systems for supporting procedure delivery to astronauts on exploration missions

The activities under the "Spaceship EAC" project are executed by a team of European students and researchers under the supervision of the future missions section at EAC, and offers a highly multidisciplinary and stimulating environment. As part of this team, the trainee will be exposed first hand to the reality of human spaceflight operations, technology, medical and crew support functions at the centre.

## Required education:

Applicants should have just completed, or be in their final year of a University course at Masters Level (or equivalent) in a technical or scientific discipline with a focus on the field of Computer Science, Applications or equivalent computational experience.
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.
Skills of particular interest are in the area of computational simulation, model based systems engineering, machine learning and machine vision.
Applicants must be fluent in English and/or French, the working languages of the Agency. A good proficiency in English is required.

# Training Opportunity for Irish Trainees

| Reference | Title | Duty Station |
|---|---|---|
| **IE-2017-HRE-AM** | **Medical Systems for future Human Space Exploration** | **EAC** |

## Overview of the unit's mission:

The primary function of the Space Medicine Office (HRE-AM) is to maximise the operational effectiveness of ESA Astronauts through the career-long management of their physical, social and mental health. In order to fulfil this function, HRE-AM provides services to the ESA Astronauts designed to support and promote long-term health, including ground-based preparation, in-flight support/health monitoring and countermeasure provision, and post-flight rehabilitation. These services are delivered through a combination of HRE-AM support staff specialist knowledge, astronaut training and the use of appropriate technologies, both in space and at EAC. In addition to supporting current ISS missions, HRE-AM is now also focused on future exploration beyond ISS (Low Earth Orbit) and developing collaborative programs related to, amongst others, autonomous medical capabilities required for exploration missions.

## Overview of the field of activity proposed:

Within the framework of autonomous medical capabilities, the applicant will be involved in a range of activities, but with a specific focus on the potential for ESA contributions to the future medical systems of other space agencies (*e.g.* NASA). Main tasks and responsibilities will include:

- Supporting projects, programmes and general studies by proposing the development of new informatics technologies to advance in-flight medical capabilities, biomedical monitoring, non-invasive laboratory analysis and medical management systems to track the health status of astronauts and thus, identifying any health decline in early stage;
- Contributing to the fostering of new areas of application for multidisciplinary activities, with an emphasis on innovative concepts and cutting-edge technologies, in particular into relevant challenges of public health and individual centred. This includes preventive as well as curative healthcare by remote guidance techniques or technology assisted therapies.
- Maintaining an up-to-date knowledge of relevant computer standards ( IoT ) and analysing their interoperability with a diverse range of products/systems, both present or future, and in terms of both implementation and access without any restrictions to a health self-tracking and personal environment monitoring;
- Participating in ESA projects and technological research (R&D) related to medical capabilities to identify future needs, requirements and critical development challenges, and potential solutions;
- Contributing to the establishment of effective working interfaces, both with other ESA sites and research institutions within ESA's Member States;
- Monitoring applicable scientific literature and technological trends to provide SMO with 'state-of-the-art' knowledge and expertise in the evolution of biomedical technologies.

## Required education:

Applicants shall have a Master's degree or equivalent qualification in biomedical engineering or in a relevant discipline with a focus on informatics signal processing.

# Training Opportunity for Irish Trainees

| Reference | Title | Duty Station |
|---|---|---|
| **IE-2017-OPS-OER** | **Spacecraft Operations** | **ESOC** |

## Overview of the unit's mission:

The Earth Observation Missions Division, within the Mission Operations Department of the Directorate of Operations is responsible for the preparation of the Flight Operations Segment for all Earth Observation Missions of ESA. This includes the preparation of the operations for the complete mission, and the execution of the operations during the mission phases operated by ESA. The missions currently assigned to the division are: CryoSat-2, Swarm, Sentinel 1, Sentinel 2 (in flight); Aeolus, EarthCare, Biomass, Flex, Sentinel 3, Sentinel 5p and Sentinel 6 (in preparation)

## Overview of the field of activity proposed:

Working as a member of the EarthCARE Flight Control Team, the trainee will assist the Spacecraft Operations Manager in the user acceptance testing of the Flight Operations Segment main facilities, namely Mission Control System, Simulator and Flight Dynamics together with the execution of the System Testing activities (e.g. System Validation Tests, Ground Segment Operational Validation campaign). In particular, the trainee will be assigned to the following main tasks:

- Testing of the Mission Control System and Simulator. This activity includes review of user requirements, preparation of test cases definition and test procedures, test execution and reporting.
- Support the preparation, execution and reporting tasks in the frame of System Validation Tests with the spacecraft as well as Ground Segment Operational Validation campaign activities.
- Support the preparation and validation of flight procedures. This activity includes review of the relevant Flight Operations Manual volumes, generation of nominal and contingency recovery procedures, validation of procedures with the simulator as well as the spacecraft.
- Support the Flight Control Team in the analysis for the Ground Station visibility for the LEOP and Commissioning phases and also the impacts of the EarthCARE calibrations on the ground segment.

EarthCARE is currently in the preparation phase, with a launch expected in 2019. During the period covered by this training opportunity, new and updated ground systems will be deployed and tested, several System Validation Tests with the satellite flight model will be executed, and the Ground Segment Operational Validation will take place. Preparation for the LEOP, Commissioning and routine operations phases will be performed.

## Required education:

Applicants should have just completed, or be in their final year of a University course at Masters Level (or equivalent) in a technical or scientific discipline.
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.
Applicants must be fluent in English and/or French, the working languages of the Agency. A good proficiency in English is required.
Applicants shall be able to work in a methodical manner, and be interested in satellite operations and testing of complex systems.

# Training Opportunity for Irish Trainees

| Reference | Title | Duty Station |
|---|---|---|
| **IE-2017-SCI-OP** | Space Science Exploitation and Preservation Platform | **ESAC** |

## Overview of the unit's mission:

Within the Science Directorate's Operations Department, the Data and Engineering Division is responsible for developing and operating the science archives for all ESA's Space Science missions, as well as running the technical IT infrastructure for all Department's science operations at ESAC.

## Overview of the field of activity proposed:

On one side, new "big data" missions like Gaia, Euclid, JWST require a change of paradigm for science archives, where scientists will have to work "at" the archives itself, bringing and running their own code where the data reside. On top of offering data access services, the archives should now offer open and collaborative research environment.

On the other side, legacy missions like Rosetta, Herschel, Planck, need to preserve their software for the long term, enabling users to re-run software used during these missions' operations phases.
Both aspects call for the implementation of a Science Exploitation and Preservation Platform to be used by scientists worldwide to fully exploit the science data available into ESA's space science archives.

The purpose of this activity is to participate to the design and implementation of the Department's Science Exploitation and Preservation Platform (based on technologies such as Platform, Software and Infrastructure as a Service), in support to science archives and science operations for Space Science missions (current, future and legacy).

This includes :

- Support to the review of Department current initiatives in the area of Science Exploitation and Preservation Platform
- Assessments of virtualization and container technologies
- Support to the review of technical, architecture and design documentation
- Evaluate federated user authentication including Department web and users portal
- Attendance to review meetings with stakeholders
- Prototyping of Science Exploitation and Preservation Platform and support to development activities
- Support project migration activities to the department Science Exploitation and Preservation Platform

## Required education:

University course at Master's level (or equivalent) in computer or software engineering.
Strong IT knowledge with experience with technology like Dockers, orchestrators, virtualization, java, python, html5 would be highly desirable.
Good communication skills and ability to work in a team with engineers and scientists is required.
Interest or knowledge of astronomy or planetary science would be an asset.

# Training Opportunity for Irish Trainees

| Reference | Title | Duty Station |
|---|---|---|
| IE-2017-TEC-QEC | Radiation Characterisation of EEE Components | ESTEC |

## Overview of the unit's mission:

The Radiation Hardness Assurance and Component Analysis Section offers a range of different training opportunities e.g. in the areas of:

- Preparation and implementation of activities for the characterisation and reliability testing of Passive Components, Semiconductors (including Millimetre wave and Microwave devices and Discretes and Integrated Circuits), Hybrids and Micropackaging, Optoelectronics, Micro Electromechanical Systems (MEMS) with particular emphasis on the determination of the electrical and functional behaviour of components in the natural space environment, radiation hardening and modeling, the design and development of radiation detectors and monitoring instruments.

## Overview of the field of activity proposed:

**Radiation Characterisation of Semiconductor Components**

In support of ESA space projects and running R&D studies the suitable candidate will carry out radiation tests on semiconductor components to determine their sensitivity to Total ionizing Dose, Displacement Damage or Single Event Effects. This also includes the specification of test plans, the configuration of test set-ups (including design and development of electronic circuits) and software, the subsequent data analysis and reporting. In addition, the candidate may work on the development of Cubesat Radiation Hardness Assurance Validation Payloads.

## Required education:

Applicants should have just completed, or be in their final year of a University course at Masters Level (or equivalent) in a technical or scientific discipline. Some familiarity with electronics, radiation effects, computer based engineering tools, high level programming languages, and some laboratory work experience will be an asset. 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.

# Training Opportunity for Irish Trainees

| Reference | Title | Duty Station |
|---|---|---|
| **IE-2017-TEC-QEE(1)** | **Low temperature radiation (charging) effects on space grade materials** | **ESTEC** |

## Overview of the unit's mission:

The Materials' Physics and Chemistry Section is responsible for assessing all material w.r.t their physical and chemical properties and property evolution for ESA's mission. This entails a detailed understanding of effects caused by the environment (ground/space). The section operates a state of the art laboratory offering a wide selection of analysis and characterisation instruments as well as space simulation facilities to evaluate materials versus the effects of the space environment (vacuum, radiation, temperature, contamination, ATOX, charging etc.).

## Overview of the field of activity proposed:

ESA is facing new challenges from its future cryogenic missions like JUICE or other lunar exploration missions due to the extreme low temperatures external materials will be encountering. In some cases appendages of the Juice spacecraft is expected to reach down to 20 K orbiting Jupiter.

Spacecraft charging can give rise to unwanted ESD (Electro-static discharge) effects which can (and has lead already to a complete mission loss.). Lower temperature are typically affecting the charging potential detrimentally, i.e. the charging risk increases by a few orders of magnitude. That's why a careful selection of materials and charging mitigation strategies is required.

The aim of the activity is to work with ESA on the low temperature ESD facility (able to expose samples down to 20K) and analyse the charging behaviour down to those low temperatures.

Besides that, the candidate will be hosted to 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.

## 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

# Training Opportunity for Irish Trainees

| Reference | Title | Duty Station |
|---|---|---|
| **IE-2017-TEC-QEE(2)** | **Effects of ATOMIC OXYGEN of external space optics and detectors** | **ESTEC** |

## Overview of the unit's mission:

The Materials' Physics and Chemistry Section is responsible for assessing all material w.r.t their physical and chemical properties and property evolution for ESA's mission. This entails a detailed understanding of effects caused by the environment (ground/space). The section operates a state of the art laboratory offering a wide selection of analysis and characterisation instruments as well as space simulation facilities to evaluate materials versus the effects of the space environment (vacuum, radiation, temperature, contamination, ATOX, charging etc.).

## Overview of the field of activity proposed:

At low orbital heights of low Earth orbit (LEO) residual gases from Earth's atmosphere are still abundant in very low concentrations. Molecular oxygen (O2) as we know it from its stable state close to Earth's surface is dissociating while absorbing high energetic UV solar radiation. This process blocks harmful light from reaching Earth and produces single O-atoms, called atomic oxygen, which is the species with highest abundance in LEO.

However, atomic oxygen is a very reactive gas and will attack most typical outer layer materials of any external optic and detector of a spacecraft. This process is called erosion and occurs due to both, the chemical oxidising potential and kinetic energy of atomic oxygen. Latter one is defined by the mass of the O-atom and by the relative speed in the moment of collision. For in flight direction facing surfaces (RAM direction) this equals in average to the orbital speed of the spacecraft in LEO, in mean being 7.8 km/s. In order to make sure that spacecraft are operational and withstand the harsh conditions of space during their whole service life, all outer surface materials need to be tested in a simulated space environment. For LEO missions this includes atomic oxygen erosion tests on material level.

The aim of this activity will be to evaluate the atomic oxygen behaviour of candidate optics and detectors versus a simulated environment in ESTEC's LEOX facility. Analysis will be done a range of state of the art in-situ as well as ex-situ characterisation investigations.

Besides that, the candidate will be hosted to 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.

## 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

# Training Opportunity for Irish Trainees

| Reference | Title | Duty Station |
|---|---|---|
| **IE-2017-TEC-QEE(3)** | **Effects of contamination on the performance of space optics and detectors** | **ESTEC** |

## Overview of the unit's mission:

The Materials' Physics and Chemistry Section is responsible for assessing all material w.r.t their physical and chemical properties and property evolution for ESA's mission. This entails a detailed understanding of effects caused by the environment (ground/space). The section operates a state of the art laboratory offering a wide selection of analysis and characterisation instruments as well as space simulation facilities to evaluate materials versus the effects of the space environment (vacuum, radiation, temperature, contamination, ATOX, charging etc.)

## Overview of the field of activity proposed:

***Relationship between molecular contamination and wavelength specific transmission loss for optical payloads***

Satellites operate in high vacuum environment, leading to outgassing of residual molecular species from polymeric materials. Whereas this effect can be minimised by good materials selection and conditioning, it cannot be entirely eliminated. In a subsequent step the outgassed molecules can re-condense on different surfaces of the spacecraft, leading to a slow build-up of molecular contamination layers over its life-time. On optical surfaces this may lead to transmission and consequently performance losses of instruments. The objective of this activity is to understand qualitatively as well as quantitatively the expected optical performance losses dependent on type of contamination over a wide spectroscopic range (UV/VIS/NIR/MIR):

- Quantify the extinction coefficient of specific model contaminants from UV to mid IR, including e.g. aliphatic/aromatic hydrocarbons, esters, and silicones.
- Establish a database from existing contamination measurements in UV/VIS/NIR as well as mid IR (FTIR) including determination of generic chemistry and film thickness. Possibly expand the database with additional experiments.
- Based on model compounds and contamination measurements, establish a model that allows prediction of spectroscopic transmission losses from knowledge of generic chemistry and film thickness.

***The activity is of interest for demanding payloads such ESA Plato or Euclid Science missions or for ESA payloads to be developed under Sentinel 4 and 5.***

Besides that, the candidate will be hosted to 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.

## 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