

Training Opportunity for Portuguese Trainees

Reference	Specialist Area	Duty Station
PT-2010-TEC-QEM(1)	Advanced Space Simulation (UV/particle exposure)	ESTEC
<p><u>Overview of the Division missions:</u></p> <p>The Materials and Components Space Evaluation Division in the Product Assurance and Safety Department of the ESA Directorate of Technical and Quality Management is responsible for the evaluation and qualification of non-metallic materials, processes and Electronic, Electrical and Electromechanical components for space flight applications. This includes the direct technical support of ESA projects and technology programmes for all related product assurance tasks and includes standardization, research and development activities to determine the suitability and reliability of materials and components to withstand the influences of the space environment.</p>		
<p><u>Overview of the field of activity proposed:</u></p> <p>There is a lack of a fundamental understanding regarding the possibility and validity of highly accelerated environmental testing used to evaluate and approve the use of materials for space applications. From the space environment (as described per ECSS E 10 04) mission specific test requirements are derived, the effects for materials & processes are then investigated according to ECSS Q 70 06.</p> <p>The purpose of the study is to investigate new methodologies and to scrutinise the validity of the acceleration factors commonly applied in space environmental testing (particle, UV, VUV etc). By new methodologies other "accelerating factors" like temperature or equivalent dose concept (e.g. can the damage that one form of radiation causes be faster be achieved – in a representative manner though - by another form of radiation) shall be assessed. This aims for a faster prediction of the behaviour of materials in a space environment. All missions but especially those with long lifetimes (e.g. 15 yrs telecom) & short development cycles would benefit. In addition, significant cost savings are deemed achievable if test durations could be shortened.</p> <p>It is also foreseen to specifically address experimentally the role of synergistic effects between different environmental factors as well as synergistic effects due to contamination.</p> <p>Expected contributions of trainee</p> <p>Integrate within team at ESTEC carrying out complex space simulation Perform extensive test programme Perform relevant materials analysis & interpret results Report results and prepare scientific publications</p>		
<p><u>Required Education:</u></p> <p>Basic understanding of space environment Graduate of Materials Science/Materials Physics & Chemistry, hands-on work Experience in a lab environment is beneficial. Good understanding of materials analysis techniques. Use of lab. Control software (e.g. Labview) is an additional asset</p>		