

## PhD Studentships

Project Title	Hyperthermal Atomic Oxygen Effects on Satellite Systems
Lead Supervisor	Dr Peter Roberts
Co-Supervisor(s)	Dr Vitor Oiko, Dr Stephen Edmondson
Programme	PhD in Aerospace Engineering
Description	<p>A funded PhD studentship is currently available, developing robust satellite technology to deal with the challenges of erosion and oxidation in Low Earth Orbits. Chemists, physicists and materials scientists wishing to conduct collaborative research between industry and academia should apply now.</p> <p>GomSpace (<a href="https://gomspace.com/home.aspx">https://gomspace.com/home.aspx</a>) is a globally leading designer, integrator and manufacturer of high-end nanosatellites for customers in the academic, government and commercial markets. Their space hardening program is a strategic priority allowing GomSpace to enter on the market for longer lifetime low Earth orbit (LEO) missions. One of the key challenges is posed by atomic oxygen (AO) interactions with spacecraft surfaces and materials. AO is the major component of the residual atmosphere in LEO, and can produce significant changes in mass and surface properties for many materials through erosion and oxidation. Therefore, improving our understanding of the space environment, interactions and effects, along with design techniques and mitigations is essential for future developments.</p> <p>At the University of Manchester we are developing a unique experimental facility that replicates the hyperthermal atomic oxygen flux in LEO. The Rarefied Orbital Aerodynamics Research Facility (ROAR) is part of the EU funded DISCOVERER project (<a href="https://discoverer.space/">https://discoverer.space/</a>) and represents a new approach to the study of materials in LEO conditions. We are an interdisciplinary group of researchers composed of physicists, material scientists and engineers. You'll integrate with the experimental team, contributing to the system's set up and optimisation. The project activities include:</p> <ul style="list-style-type: none"> <li>• Conducting atomic oxygen exposure tests on spacecraft hardware like solar array assemblies.</li> <li>• Based on experimental results you will determine the dominant mechanisms of the gas-surface interaction and erosion.</li> <li>• Devise design changes in other to improve lifetime to expected targets.</li> <li>• Liaise with both partners to support and encourage close collaboration, securing the transfer of knowledge between the university and GomSpace.</li> </ul> <p>By joining us you will profit from:</p> <ul style="list-style-type: none"> <li>• A rich and diverse environment with members from different cultural</li> </ul>

	<p>backgrounds. The DISCOVERER consortium has 9 partners from 6 different countries.</p> <ul style="list-style-type: none"> <li>• The opportunity of working at the interface of two important different sectors, which provides you with valuable experience, contributing significantly to your professional development.</li> <li>• Close interaction with specialists of different fields from academia and industry through monthly project meetings in addition to regular supervision meetings.</li> <li>• Opportunities to travel to partner universities in Europe for conferences and project meetings.</li> </ul>
Skills required	<p>Entry requirements can be found by selecting the relevant PhD programme at this link: <a href="http://www.mace.manchester.ac.uk/study/postgraduate-research/degree/">http://www.mace.manchester.ac.uk/study/postgraduate-research/degree/</a></p> <p>Must have experience of hands-on practical projects. Knowledge of high vacuum system development and experience of using high vacuum facilities is desirable. Would suit an engineer or practical physics graduate.</p>
Industrial Links	<p>Part-funded by GomSpace through a MACE Beacon scholarship.</p> <p>The DISCOVERER project involves a consortium of industry and university partners from across the space sector. For more details see <a href="http://DISCOVERER.space">http://DISCOVERER.space</a></p>
Closing date for applications	This project is currently accepting applications
Project specific enquiries	Please contact Dr Peter Roberts at <a href="mailto:peter.c.e.roberts@manchester.ac.uk">peter.c.e.roberts@manchester.ac.uk</a>

**General enquiries:**

General enquiries relating to the postgraduate application process within Mechanical, Aerospace & Civil Engineering should be directed to:

[Martin Lockey](#) - Senior PG Recruitment & Admissions Administrator

Tel: +44(0)161 275 4345

**Further information about how to apply can be found at:**

<http://www.mace.manchester.ac.uk/study/postgraduate-research/apply/>