

<b>Information on Postgraduate Research Scholarship - Ref: M34Impact-MSE6</b>			
<b>Faculty:</b>	Engineering and Science	<b>Department:</b>	Computing and Mathematical Sciences
<b>Lead Supervisor:</b>	Dr Christopher Beckwith		
<b>Project Title:</b>	Accelerated Urban Air Quality Modelling for the Strategic Deployment of Pollutant-Mitigating Catalytic Surfaces		
<b>Project Description:</b>	<p>Urban air quality is influenced by multiple factors including traffic emissions, human behaviour, meteorology, and the built environment. This project aims to develop high-performance, GPU accelerated numerical models capable of simulating air high resolution air pollution dynamics across London. The project will incorporate a detailed emissions model tightly coupled to a high-performance fluid dynamics solver enabling fully integrated simulations of airflow, dispersion, and reactive transport of pollutants such as NO<sub>2</sub>, O<sub>3</sub>, CO<sub>2</sub>, and volatile organic compounds (VOCs). The accelerated solver will build on an existing Lattice Boltzmann solver, and could involve developing surrogate models (e.g., Physics-Informed Neural Networks) for coupled physics such as reactive transport.</p> <p>The resulting coupled solver will be used to support urban planning decisions that affect air quality, from microscale street canyon flows to mesoscale atmospheric dispersion. This project will focus on the "Environmental Catalytic City" concept, investigating how the deployment of photocatalytic coatings on urban infrastructure can reduce the concentration of harmful ambient pollutants via chemical degradation under natural sunlight. This project will look to use the solver to identify potential deployment sites and strategies that reduce their exposure to moisture, maximise pollutant contact time, and increase real-world efficiency of catalytic surfaces.</p> <p>The ideal candidate will have a strong interest in the built environment, computational modelling, physics, and/or engineering, with proficiency in programming languages such as C++ and Python. Prior experience with GPU programming (e.g., CUDA, OpenCL, or SYCL) or Machine Learning is highly desirable but not essential</p> <p>This studentship is fully funded by the £9 million Research England-funded M34Impact expansion programme. This project represents a cornerstone of the Computational Science and Engineering Group's (CSEG) research goals, allowing the successful applicant to join a team with extensive, world-leading expertise in numerical modelling, computational fluid dynamics (CFD), and GIS.</p> <p>You will be fully embedded within the M34Impact doctoral cohort and play a key role in our dynamic, growing research group. Driven by this Expanding Excellence in England (E3) grant, you will benefit directly from</p>		

	specialized training, collaborative initiatives, and the cutting-edge resources dedicated to advancing our core research.
<b>Duration:</b>	4 years, Full-Time Study or 7 years, Part-Time Study
<p><b>Bursary available (subject to satisfactory performance):</b>  Rates below are for full time (FT) mode.  Year 1: £24,780 (£20,780 UKRI rate + London weighting = £2,000 + Enhanced bursary = £2,000)  Year 2: In line with UKRI rate + London weighting = £2,000 + Enhanced bursary = £2,000  Year 3: In line with UKRI rate + London weighting = £2,000 + Enhanced bursary = £2,000  Year 4*: In line with UKRI rate + London weighting = £2,000 + Enhanced bursary = £2,000</p> <p>In addition, the successful candidate will receive a contribution to tuition fees, equivalent to the University Home Rate, currently £5, 006 (FT), for the duration of their scholarship. International applicants may need to pay the remainder tuition fee for the duration of their scholarship**.</p> <p>This fee is subject to an annual increase.</p> <p>* The bursary is for 3 years with a potential extension of up to a maximum of 12 months. Funding extensions may be granted if the student demonstrates, to the satisfaction of the M<sup>3</sup>4Impact Principal Investigators and PhD supervisors, that the thesis can be completed during the granted extension period.  ** For exceptional international applicants the tuition fees may be covered by the M<sup>3</sup>4Impact</p>	
<b>Person Specification of Essential (E) or Desirable (D) requirements:</b>	
<b>Criteria:</b>	<b>E or D</b>
<b>Education and Training:</b>	
<ul style="list-style-type: none"> <li>1st Class or 2nd class, First Division (Upper Second Class) honours degree or a taught master's degree with a minimum average of 60% in all areas of assessment (UK or UK equivalent) in a relevant area (e.g., Computer Science, Physics, Materials Science, Engineering) or equivalent professional experience.</li> </ul>	E
<ul style="list-style-type: none"> <li>For those whose first language is not English and/or if from a country where English is not the majority spoken language (as recognised by the UKBA), a language proficiency score of at least IELTS 6.5 (in all elements of the test) or an equivalent UK VISA and Immigration secure English Language Test is required, if your programme falls within the faculty of Engineering and Science a language proficiency score of at least IELTS 6.5 overall with a minimum of 6.0 in all elements of the test or an equivalent UK VISA and Immigration secure English Language Test is required. Unless the degree above was taught in English and obtained in a majority English speaking country, e.g. UK, USA, Australia, New Zealand, etc, as recognised by the UKBA.</li> </ul>	E
<b>Experience &amp; Skills:</b>	
<ul style="list-style-type: none"> <li>Previous experience of undertaking research (e.g., undergraduate or taught master's dissertation).</li> </ul>	E
<ul style="list-style-type: none"> <li>Experience in a related discipline e.g. Mathematical Modelling, Computer Science, Applied Mathematics, Environmental Engineering, Machine Learning</li> </ul>	E
<ul style="list-style-type: none"> <li>Experience in programming (eg, C, C++, Python or Fortran)</li> </ul>	E

• Experience with physics-based simulation (e.g., CFD, FEA) or high-performance computing (HPC).	D
• Experience with GPU programming frameworks (e.g., CUDA, OpenCL, or SYCL).	D
• Familiarity with Geographic Information Systems (GIS)	D
<b>Personal Attributes:</b>	
• Strong personal motivation and resilience, with a clear understanding of the self-directed nature of a research degree.	E
• An ability to work independently, take ownership of a long-term project, and make consistent progress.	E
• A genuine curiosity and enthusiasm for collaborative, interdisciplinary science.	E
• Experience or interest in contributing to new projects, workflows, or open-source tools.	D
<b>Other Requirements:</b>	
• This scholarship may require Academic Technology Approval Scheme (ATAS) approval for the successful candidate if from outside of the EU/EEA.	E
• The scholarship must commence by 01 September 2026.	E
<b>Closing date for applications:</b>	<b>8<sup>th</sup> June 2026</b>
<b>For further information contact:</b>	<b>Dr Christopher Beckwith (c.beckwith@greenwich.ac.uk)</b>
<p><b>Making an application:</b> Please read this information before making an application. Information on the application process is available at: <a href="https://www.gre.ac.uk/research/study/apply/application-process">https://www.gre.ac.uk/research/study/apply/application-process</a>. Applications need to be made online via this link. <b>No other form of application will be considered.</b></p> <p>All applications <b>must include</b> the following information. <b>Applications not containing these documents will not be considered.</b></p> <ul style="list-style-type: none"> <li>• <b>Scholarship Reference Number (“M34Impact-MSE6”)</b>– included in the personal statement section together with your personal statement as to why you are applying</li> <li>• <b>a CV including 2 referees *</b></li> <li>• <b>academic qualification certificates/transcripts and IELTS/English Language certificate if you are an international applicant or if English is not your first language or you are from a country where English is not the majority spoken language as defined by the UK Border Agency *</b></li> </ul> <p><i>*upload to the qualification section of the application form. Attachments must be a PDF format.</i></p> <p>Before submitting your application, you are encouraged to liaise with the Lead Supervisor on the details above.</p>	