PhD Studentships in the Department of Materials Science University of Cambridge

This document lists project studentships which are fully funded and usually available immediately, if not then usually they are available from the start of the next academic year. The majority are available to 'home rate fee' paying students only.

For other information, please contact:
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Please include a CV and state your project(s) of interest.

PhD Studentships

Fully-funded PhD studentships

PhD Studentship: Modelling of strain-rate effects in pharmaceutical tabletting

Funder: Novo Nordisk (home and overseas candidates eligible)
Duration: 4 years (start October 2024)
Supervisors: Professor James Elliott
Closing date: 16 May 2024
Stipend: EPSRC equivalent, £19,237 per annum

During early-stage formulation and process development, scientists undergo extensive experimental screening campaigns and, although the tablet failure risk is reduced, there still exist risks that remain undetected and often cause issues during upscaling to production settings, leading to delays and at times undesired process changes. Being able to predict the compaction behaviour at different compression speeds, densities and compositions before formulations are transferred to large-scale production, will be a game changer in the tabletting field. Develop an experimental protocol to investigate the effect of the compression speed, tablet composition and powder characteristics on the tabletting performance. The main aims of this project are:

1. Improve our existing discrete element model (VLS-DEM) to enable the compression performance prediction considering the attributes mentioned above
2. Apply the framework to a systematic tablet production upscaling study

Applicants should have (or expect to be awarded) an upper 2nd or 1st class honours degree at the level of MSci, MEng (or overseas equivalents) in a relevant subject (Physics, Chemistry, Materials Science, Maths), some programming experience and a willingness to engage with industry throughout the project.

Informal enquiries may be made by email to Professor James Elliott, jae1001@cam.ac.uk.

Applications are made through the 'applicant portal' at https://www.postgraduate.study.cam.ac.uk/. Further information on the application process is available from Dr Rosie Ward (remw2@cam.ac.uk).

References

Volume-interacting level set discrete element method: The porosity and angle of repose of aspherical, angular, and concave particles
DLH van der Haven, IS Fragkopoulos, JA Elliott Powder Technology 433, 119295 (2024)

A physically consistent Discrete Element Method for arbitrary shapes using Volume-interacting Level Sets
DLH van der Haven, IS Fragkopoulos, JA Elliott Computer Methods in Applied Mechanics and Engineering 414, 116165 (2023)

PhD Studentship: Centre for Doctoral Training in Materials 4.0

Funder: EPSRC via the Centre for Doctoral Training in Materials 4.0
Duration: 4 years (start October 2024)

Fee status: Home rate fees only
Supervisors: Will depend on student project selection
Closing date: 30 April 2024
Stipend: £19,237 per annum

This studentship is offered under the umbrella of the Materials 4.0 Centre for Doctoral Training (CDT) led by the Henry Royce Institute, the UK's national institute for advanced materials research.

Right now, our society faces huge, urgent challenges. From the imperative to achieve net-zero, to the need to build a resilient, circular economy in an uncertain world, to the drive for increased productivity as our fellow nations embrace the digital revolution.

To tackle these challenges, we need new materials and new materials systems, and we need them fast. But it can take 20 years to develop a new material with current methods. We need to innovate faster, as the pace of global change accelerates. This is where you come in……

We are seeking graduate scientists and engineers keen to acquire new skills and work in new ways, to help us realise the potential of the digital and data revolutions in materials science. This is Materials 4.0.

- You will join a community of like-minded PhD researchers as part of a new EPSRC-funded CDT in Materials 4.0, led by the Henry Royce Institute, the UK's national institute for advanced materials research.
- You will be based at Cambridge University and undertake a research project supervised by a leading researcher and with an industry sponsor.
- You will be trained in all aspects of digital materials science, including robotics, data science, machine learning, and sensing and control.
- You will become a pioneer and leader in this exciting new way of doing science.

We have a range of exciting doctoral projects, involving all aspects of Materials 4.0, and offer flexible and inclusive pathways, including part-time study.

Informal enquiries may be made by email to Professor Rachel Oliver, rao28@cam.ac.uk.
Applications are made through the 'applicant portal' at https://www.postgraduate.study.cam.ac.uk.
Further information on the application process is available from Dr Rosie Ward (remw2@cam.ac.uk).

We reserve the right to fill the position with a qualified candidate prior to the conclusion of the advertising period.

PhD projects for which funding is available from the Department on a competitive basis

None at present.

The University of Cambridge and the Department of Materials Science & Metallurgy value diversity and are committed to equality of opportunity.