



# EPSRC MediForge Hub: Modelling and Simulation Engineer

Department	Strathclyde Institute of Pharmacy and Biomedical Sciences ( <a href="http://www.strath.ac.uk/science/strathclydeinstituteofpharmacybiomedicalsciences/">www.strath.ac.uk/science/strathclydeinstituteofpharmacybiomedicalsciences/</a> )		
Faculty	Faculty of Science ( <a href="http://www.strath.ac.uk/science/">www.strath.ac.uk/science/</a> )		
Staff Category	Technical Services	Reference No	676614
Reports To	Dr Cameron Brown, Project Co-Lead	Grade	7
Salary Range	£36,924-£40,247	Contract Type	Fixed Term (Until 30/09/2028)
FTE	1 (35 hours/week)	Closing Date	10/02/2025
Working Arrangements	Fully On-site. Due to the nature of this role, it is based fully on-site.	On Site Facilities	Car parking, sports centre, catering.
Holidays	31 days + 11 statutory days Option to purchase additional holidays.		
Pensions	Contributory pension scheme available to all staff including generous employer contribution.		
Training	Professional Development with <a href="#">Organisational and Staff Development Unit</a> (OSDU) plus external training if required.		
Family Friendly Benefits	Generous parental leave provision, on-campus nursery and options for flexible working.		
Health and Wellbeing	University Sport centre, Occupational Health service, access to health and wellbeing events, cycle to work scheme, Employee Assistance Programme, agile working and established carers support network and carer friendly policies.		

## Job Advert

CMAC is a world leading medicines manufacturing research centre based in the Technology and Innovation Centre (TIC) at the University of Strathclyde. The centre works closely with leading pharmaceutical companies to transform the way that medicines are developed and made and support a portfolio of research programmes to deliver our shared vision.

Applications are invited for a Modelling and Simulation Engineer (Grade 7) to work in the EPSRC MediForge: Industry 5.0 Medicines Manufacturing Research Hub ([www.cmac.ac.uk](http://www.cmac.ac.uk)) being delivered by CMAC. The Hub comprises a multidisciplinary team of academics and researchers located across five leading UK Universities (Strathclyde, Leeds, Sheffield, Imperial College and Glasgow School of Art) providing a platform for collaborative research, training and knowledge exchange in the area of advanced pharmaceutical manufacturing. The MediForge Hub was awarded under EPSRC's Manufacturing Hubs for A Sustainable Future (Round 2) call and aims to develop a systems level approach for predictive design of sustainable, resilient and human-centric future medicines manufacturing covering multiple stages across drug substance and drug product processing. The CMAC Hub has a large and vibrant programme with key Industry partners including AZ, Chiesi, Lilly, Pfizer, Roche, Sanofi, Takeda and UCB with a broad range of technology companies. The Hub also benefits from significant recent capital investments through our £33M UK RPIF Data Lab partnership creating a world class suite of advanced processing, automation, analysis, digital technologies and computational infrastructure to support MediForge research.

A key goal of Platform 1 is to deliver an integrated cyberphysical research infrastructure (CPRI) that connects comprehensive data generated from a suite of material sparing, self-driving DataFactory platforms for the target processing steps into a novel medicines manufacturing research data fabric. This will integrate with the end-to-end digital twin in Platform 2 to enable whole process design and optimisation for quality and sustainability. Designs will be evaluated from data generated by the MediForge MicroFactory Test Bed (Platform 3) spanning drug substance (synthesis, crystallisation, isolation) and drug product (feeding, blending, compaction) unit operations.

The Modelling and Simulation Engineer, supporting Platforms 1 and 2 reports to the Project Co-lead and will work closely with a multidisciplinary team of academics, PDRA's and PhDs. Within the multidisciplinary team this post will support the acquisition and processing of data, and the building of physics-based (mechanistic), data-driven and/or hybrid models across all key primary processing (drug substance) steps (e.g. synthesis, work-up, crystallisation, filtration, washing and drying). The post holder will be responsible for developing new or implementing existing models, and the parameterisation or training of these models for specific cases, reporting on project progress and contribute to the preparation of research papers arising from these and related studies in the group.

You should hold a HNC/HND in a relevant discipline (e.g. Chemical or Pharmaceutical Engineering) or a related area with significant, experience in process systems modelling. Experience in drug substance manufacturing processes would also be beneficial.

## Job Description

### Brief Outline of Job:

As a Modelling and Simulation engineer, you will provide scientific and technical expertise to support the implementation, development and usage of process models in MediForge exploiting an innovative CPRI for digital medicines development and sustainable manufacturing.

### Main Activities/Responsibilities:

1.	Work with the Co-lead, Platform 1 and 2 teams to deliver the MediForge cyberphysical research infrastructure (CPRI) for integrated drug substance and drug product processes.
2.	Responsible for the development, implementation and usage of physics-based, data-driven or hybrid models as part of the CPRI. This will involve evaluating the available data, review of literature for existing models, and training and testing of models to achieve acceptable performance.
3.	Develop and apply process models within MediForge developing individual unit operation and whole-process flow sheet models and associated methods for model parameterisation, sensitivity analysis, optimisation and validation.
4.	Support the acquisition, processing, and analysis of data generated from the development platforms to feed into the modelling efforts. This will include working with other researchers in Platforms 1 and 3 to agree data requirements.
5.	Provide regular reports on progress to the Co-lead and other key MediForge staff. Liaise and consult with the Hub management team, academics and industrialists to ensure alignment of research as well as the timely delivery of high-quality research with impact in the form of presentations and/or in-person meetings.
6.	Work with academics and other key postholders in MediForge to ensure use of models across Platforms 1, 2 and 3. For example, providing training to other researchers, and contributing to plans for modelling approaches.
7.	Carry out other tasks as requested by PI in support of MediForge and CMAC priorities and goals, such as temporary support for other researchers, and contributing to wider CMAC meetings.
8.	Engage in continuous professional development, such as keeping up to date with relevant articles and developments, undertaking training courses, and participating in professional networks and events.

## Person Specification

### Educational and/or Professional Qualifications

(E=Essential, i.e. a candidate must meet all essential criteria to be considered for selection, D=Desirable)

E1 HNC/HND in Chemical Engineering, Chemistry or related subject.

D1 1st Degree in Chemical or Pharmaceutical Engineering or relevant subject area.

D2 Membership of relevant Chartered/professional body.

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## Experience

- E2 Experience of one or more programming languages and/or modelling packages for model development and application e.g. Python, MATLAB, gPROMS FormulatedProducts.
- E3 Application of informatics, data science/engineering, machine learning and artificial intelligence approaches
- E4 Application of flow sheet modelling to process design, including model building, parameter estimation, heat/mass/population balance models, global sensitivity analysis and optimisation.
- E5 Knowledge of data management policies and use of data or information management systems within context of research.
- D3 Knowledge and experience of advanced pharmaceutical development and manufacturing paradigms including continuous processing, PAT, and process control.
- D4 Knowledge of process design fundamentals for key unit operations in drug substance process development including synthesis, purification, crystallisation, filtration and drying
- D5 Knowledge of common unit operations and process development for drug product manufacturing

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## Job Related Skills and Achievements

- E6 Ability to plan and organise workload within a research team.
- E7 Ability to work within multidisciplinary projects and ensuring the timely and effective delivery of project objectives and outputs.
- E8 You will have excellent verbal and written communications skills with the ability to write clearly and succinctly for dissemination of plans and outputs to different audiences. You will have demonstrable experience of good software/model development including the use of version control and validation. You must also be able to work as a member of a team and have excellent organisational skills.

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## Personal Attributes

- E9 Excellent written and oral communication skills.
- E10 Excellent interpersonal and communication skills, with the ability to listen, engage and persuade, and to present complex information in an accessible way to a range of audiences.
- E11 Ability to work to deadlines with accuracy and precision.
- E12 Proactive and able to use initiative to identify the best solution to a range of different problems and issues, offering recommendations to more senior managers in more complex situations.

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## Other Relevant Factors

- E13 Strong analytical skills.
- E14 Ability to balance work and time between conflicting demands.
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## Application Procedure

Applicants are required to complete an application form including the name of three referees who will be contacted without further permission, unless you indicate that you would prefer otherwise. Applicants should also submit a Curriculum Vitae and a covering letter detailing the knowledge, skills and experience you think make you the right candidate for the job. Applicants should also complete the Equal Opportunities Monitoring Form.

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## Other Information

Further information on the application process and working at Strathclyde can be found on our website (<http://www.strath.ac.uk/hr/workforus>).

Informal enquiries about the post can be directed to Dr Cameron Brown, Reader ([cameron.brown.100@strath.ac.uk](mailto:cameron.brown.100@strath.ac.uk)).

## Conditions of Employment

Conditions of employment relating to the Technical Services staff category can be found at: [Conditions of Employment](#).

## Rewards and Benefits

Our staff have access to a wide range of outstanding benefits that include financial rewards, family friendly and wellbeing benefits and career development opportunities, details of which can be found [here](#).

## Probation

Where applicable, the successful applicant will be required to serve a 9 month probationary period.

## Pension

The successful applicant will be eligible to join the Universities' Superannuation Scheme. Further information regarding this scheme is available from [Payroll and Pensions](#).

## Relocation

Where applicable, the University offers a relocation package to support new employees who meet the eligibility criteria. The relocation package is offered as a contribution towards costs incurred, and is designed to be flexible, allowing staff to use the financial support available in the way that will be most helpful to them. Further details are outlined in the Relocation Policy.

## Interviews

Formal interviews for this post will be held in February 2025.

## Equality and Diversity

The University of Strathclyde is a socially progressive institution that strives to ensure equality of opportunity and celebrates the diversity of its student and staff community. Strathclyde is people-oriented and collaborative, offering a supportive and flexible working culture with a deep commitment to our equality, diversity and inclusion charters, initiatives, groups and networks.

We strongly encourage applications from Black, Asian and minority ethnicity, women, LGBT+, and disabled candidates and candidates from lower socio-economic groups and care-experienced backgrounds.

## University Values

The University's Values capture what we're all about: who we are, what we believe in and what we stand for. [Our Values](#) have been derived from how we act and how we expect to be treated as part of Strathclyde.

