



# EPSRC MediForge Hub: Process Integration Research Fellow

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	Research	Reference No	647357
Reports To	Professor Alastair Florence, Director	Grade	8
Salary Range	£45,585 - £56,021	Contract Type	Fixed Term until 31/08/2028
FTE	1 FTE	Closing Date	20/10/2024
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 Platform Research Fellow (grade 8) 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 Process Integration Research Fellow post in Platform 1 reports to the PI and will work closely with a multidisciplinary team of academics, PDRAs and PhDs. Within the multidisciplinary team this post will be principally responsible for ensuring that detailed process understanding across all key primary process steps informs the development and integration of a suite of material sparing process development and testing platforms across scales. The research focus is on addressing unmodelled phenomena at the interfaces between process steps to enable improved predictive design of sustainable end to end processes. The post holder will be responsible for undertaking original experimental research, reporting on project progress and the preparation and submission of research papers arising from these and related studies in the group.

You hold a PhD in a relevant discipline (e.g. Chemical or Pharmaceutical Engineering) or a related area reinforced with several years' experience in pharmaceutical process development, process systems modelling and optimisation. Ideally you will possess experience in up and downstream processes for pharmaceutical manufacturing, process analysis, scale up/down approaches.

## Job Description

### Brief Outline of Job:

As a senior researcher, you will provide scientific and technical expertise to support the development and operation of integrated drug substance processes in MediForge exploiting an innovative CPRI for digital medicines development and sustainable manufacturing. In addition to the specific focus on digital and physical integration of processing steps across MediForge, you will support specific research projects aligned with the scope of the Hub. You will also provide leadership to PhDs in the Pharmaceutical Science and Engineering Research Group, providing mentoring and support to students.

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 must also be able to work as a member of a team, as well as demonstrate successful track record of research achievement and have excellent organisational skills.

### Main Activities/Responsibilities:

1.	Working with the PI and Platform 1 team to deliver the MediForge cyberphysical research infrastructure (CPRI) for integrated drug substance and drug product processes.
2.	Responsible for leading process integration and setting system-wide objectives across all target unit operations in the CPRI to address key research questions and sustainability targets. Ensure effective experimental and modelling approaches are identified, evaluated and implemented and that interactions between process stages are modelled appropriately.
3.	Develop and apply process systems engineering approach within MediForge developing whole-process flow sheet models and associated methods for model parameterisation, sensitivity analysis, optimisation and validation.
4.	Develop small scale, material sparing development platforms and scale-up process demonstrators for all drug substance and drug product steps advising on all aspects of process analysis and control for optimal integration to ensure all relevant process parameters are effectively evaluated, modelled and controlled.
5.	Implement QbD, FAIR and sustainability principles across MediForge research as well as supporting CMAC's ED&I, Responsible Research and Innovation, Trusted Research and Data Management Policies.
6.	Provide regular reports on progress to PI and other key MediForge staff. Liaise and consult with Hub management team, academics and industrialists to ensure alignment of research as well as the timely delivery of high-quality research with impact.
7.	Working with academics and other key roles in MediForge to ensure effective scale up of processes from Platform 1 to Platform 3.
8.	Disseminate results emerging from research in an effective and timely manner and submit publications to high quality peer reviewed journals and conference proceedings.
9.	As research group co-ordinator for PI, organise meetings and provide ongoing training, support, direction, mentoring and coaching for junior researchers, PhD students, project students and technical staff within CMAC.
10.	Carry out other tasks as requested by PI in support of MediForge and CMAC priorities and goals.
11.	Engage in continuous professional development.

# 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 Degree in Chemical Engineering, Chemistry or related subject.
- E2 PhD in Chemical or Pharmaceutical Engineering or relevant subject area.
- D1 Membership of relevant Chartered/professional body.

## Experience

- E3 Knowledge and experience of advanced pharmaceutical development and manufacturing paradigms including continuous processing, PAT, and process control.
- E4 Knowledge of process design fundamentals for key unit operations in drug substance process development including synthesis, purification, crystallisation, filtration and drying
- D2 Knowledge of common unit operations and process development for drug product manufacturing
- E5 Application of flow sheet modelling to process design, including model building, parameter estimation, heat/mass/population balance models, global sensitivity analysis and optimisation.
- E6 Application of informatics, data science/engineering, machine learning and artificial intelligence to pharmaceutical manufacturing
- D3 Knowledge of sustainability and/or green chemistry metrics and methods including process mass index, E-factor and life cycle analysis application in the process manufacturing
- E7 Experience of one or more programming languages and/or modelling packages for model development and application e.g. python, MATLAB, LabVIEW, gPROMS and PharmaMV
- E8 Design and configuration of processing equipment including use of PAT and process control
- D4 Experience of contributing to the development of novel research projects and in leading the successful delivery of outputs on time with high quality research outputs.
- D5 Experience of safety in relation to working with chemicals and chemical processes in university environment. Excellent awareness of safe working practices and safety regulations, e.g. COSSH, DSEAR.
- E9 Experience of staff supervision, managing scientific equipment and laboratory facilities and budgets.
- E10 Knowledge of data management policies and use of data or information management systems within context of research.
- D6 Knowledge of EPSRC equality diversity and inclusion, responsible research and innovation and trusted research policies.

## Job Related Skills and Achievements

- E11 Ability to plan and organise workload, including the ability to supervise and delegate work within a research team.
- E12 Ability to manage multidisciplinary projects and ensuring the timely and effective delivery of project objectives and outputs.
- E13 Ability to work with partners outwith the University and to promote the Hub's research.
- E14 Ability to deliver student supervision, mentoring and training activities.
- E15 Ability to develop research proposals and attract types of funding appropriate for role

## Personal Attributes

- E16 Excellent written and oral communication skills.
- E17 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.
- E18 Ability to work to deadlines with accuracy and precision.
- E19 Ability to influence senior colleagues to implement change.
- E20 Ability to work independently or as part of a team with the ability to lead teams.

---

## Other Relevant Factors

E21 Strong analytical skills.

E22 Good computer literacy including databases, spreadsheets and statistical analysis.

E23 Ability to balance work and time between conflicting demands.

E24 Able to present at conferences and seminars with authority and coherence.

---

## 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.

## Other Information

---

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

Informal enquiries about the post can be directed to Professor Alastair Florence, Hub Director ([alastair.florence@strath.ac.uk](mailto:alastair.florence@strath.ac.uk)).

### Conditions of Employment

Conditions of employment relating to the Research 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](#).

### Pre-employment health screening

An offer of appointment will be subject to a medical assessment by Occupational Health. An individual who accepts an offer of employment must complete a confidential medical questionnaire and forward it to the Occupational Health Nurse within 5 days of receipt. If further information is required the individual may be contacted by the OHN or a Medical Advisor and a personal appointment with the individual may be arranged. An unconditional contract of employment will not be issued until Human Resources receives confirmation that applicant is fit to undertake the duties of the post.

### Probation

Where applicable, the successful applicant will be required to serve a 12 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 November 2024.

### 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.



# Conditions of Employment

## Research Staff

### 1. GENERAL CONDITIONS

Members of staff are subject to the Charter and Statutes and the Ordinances and Regulations of the University, published in the Calendar, and to any amendments or additions thereto approved by the University Court and, in the case of the Charter and Statutes, the Privy Council. Staff are also expected to familiarise themselves with, and adhere to, general University policies and procedures, as published on University web pages.

The University Court recognises Strathclyde Universities and College Union (SUCU) as the sole body with which it will negotiate and consult on all collective issues concerned with the terms and conditions of employment of Research Staff. Such terms and conditions may be varied by the University Court after negotiation and consultation with SUCU.

Each member of staff is responsible for the proper performance of allocated duties to the person or persons specified in the member of staff's letter of appointment and any accompanying papers.

The University is committed to ensuring that its business is conducted in an open and transparent manner and will take all appropriate steps to address risks of bribery or corruption. Members of staff are required at all times to act honestly and with integrity and to safeguard the resources for which they are responsible. The University has in place a robust Public Interest Disclosure (Whistleblowing) Policy to enable concerns to be brought to its attention. This is available at [www.strath.ac.uk/publicinterestdisclosure](http://www.strath.ac.uk/publicinterestdisclosure). Other relevant policies, e.g. Fraud Prevention and Conflicts of Interests, can also be found on the University's website.

Any member of staff may at any time be exposed to commercially sensitive information, information related to potentially valuable intellectual property or information which may otherwise be of a confidential nature. This information, which could be found anywhere in the University, may be written or disclosed orally, can include information of a commercial or technical nature, and may be owned by the University or by third parties. The University requires all employees to keep any such information confidential in the first instance and not disclose, publish or otherwise disseminate it without prior consent of the University. Such confidentiality obligations are commonplace and in the commercial interests of the University. When in doubt advice should always be sought from Research and Knowledge Exchange Services prior to disclosure.

The University operates probationary periods for new staff, the duration of which will be specified in individual letters of appointment. The normal probation period for posts in this staff category is 9 months for those at grades 6 and 7, and 12 months for grades 8 and above. Further guidance on probationary procedures is published at <http://www.strath.ac.uk/staff/policies/hr/>.

Further guidance on probationary procedures is published at [www.strath.ac.uk/hr](http://www.strath.ac.uk/hr).

Further information on the terms and conditions specified in this document and other staffing policies and procedures can also be found at [www.strath.ac.uk/hr](http://www.strath.ac.uk/hr).

### 2. SALARY

Appointments are made at an appropriate salary point on the University's grading structure, with initial placing determined according to qualifications and experience. Increments are paid to staff on the 12 month anniversary of their appointment. Where this is not the first of the month, the increment will be paid on the first of the month directly

after the 12 month anniversary. This allows 1 progression to the next point on the salary scale until the top guaranteed point of the scale is reached.

Salaries are paid directly to staff members nominated bank account, normally on the second last working day of the month.

### 3. HOURS OF WORK

Working time is that required to fulfil the duties of the post. The University Court recognises that research staff carry out these duties in a variety of ways appropriate to the nature of the research activity, but expects regular contact to take place between the research staff employee and the supervisor/granholder (where these positions are occupied by different individuals) during normal working hours on week days. There are exceptions to this pattern which may involve contact at other locations or in the evenings, or at weekends, but these arrangement will be made with the agreement of the member of staff concerned.

Duties may, by arrangement with Head of Department/School/Director, include some teaching associated with the post (up to a maximum of 40 hours per semester) for which no additional payment will be made.

Additional work which does not fall within the scope of that described above may by arrangement attract payment which must be authorised and processed through the payroll.

### 4. HOLIDAYS

Annual leave entitlement is 31 days per year to be taken by agreement with the line manager. For staff members working on a part-time basis, holidays will be calculated on a pro-rata basis.

In addition to annual leave there is an entitlement to eleven public holidays per year which should be taken on days that the University is closed for this purpose. The University presently closes for four additional days over the Christmas and New Year period. **These additional days count against the annual leave entitlement.**

For staff members working on a part-time basis, public holiday entitlement will be calculated on a pro-rata basis.

Annual leave and public holiday entitlements should be taken in the leave year to which they relate. Up to five days leave can be carried forward into the new leave year subject to line management agreement. In exceptional circumstances, Heads of Department/School/Director may approve carry forward of accrued annual leave in excess of five days.

The University's expectation is that staff take all accrued holidays prior to their termination date. If staff have exceeded their entitlement the University will deduct an equivalent number of days pay from final salary payments.

## 5. SICKNESS ABSENCE

During any period of absence through illness or injury provided the appropriate notification and certification procedures have been followed the University will pay a member of staff (having taken account of the aggregate of all periods of absence due to illness during the twelve months immediately preceding the first day of the current absence) as follows:

<b>Period of Continuous Employment at start of absence from work</b>	<b>Full Pay</b>	<b>Half Pay</b>
Less than 1 year	1 month	1 month
1 year but less than 2 years	2 months	2 months
2 years but less than 3 years	4 months	4 months
3 years but less than 5 years	5 months	5 months
5 years or more	6 months	6 months

In order to manage the University's sick pay scheme the University requires to maintain sickness absence records on individual members of staff. When making payments after the expiry of statutory sick pay the University will deduct an amount equivalent to any benefit normally payable by the Department of Work and Pensions. For full details on the general University policy in this area please refer to the Sickness Absence Management Policy at [www.strath.ac.uk/staff/policies/hr](http://www.strath.ac.uk/staff/policies/hr).

## 6. PENSIONS

If you are under age 75 at the date your appointment commences you will automatically become a member of the pension scheme operated by the University — the Universities Superannuation Scheme (USS). You will be admitted to the career revalued benefits scheme called the USS Retirement Income Builder; the contribution rate that currently applies is 6.1% of pensionable salary. A threshold applies to the maximum salary that counts towards the USS Retirement Income Builder. The current threshold from 1 April 2024 is £70,296 per year. Contributions based on salary above the monthly equivalent rate of the threshold are paid to the defined contribution section of the scheme called the USS Investment Builder. Please use the following link to access information, including the USS Member Guide: <https://www.uss.co.uk/for-members/youre-a-new-joiner>. The scheme booklet is called 'Your Guide to the Universities Superannuation Scheme'.

The University operates a salary exchange arrangement, Pensions Plus, for members of the USS. Pensions Plus enables pension contributions to be made in a manner so that both employees and the University can benefit from available National Insurance Contribution savings. You will be automatically included in Pensions Plus, provided it does not adversely affect your take-home pay or your ability to claim certain state benefits. If your earnings fall below the Pension Plus pay protection limit you will be opted out of Pension Plus. This will not affect your membership of the USS.

New members of staff may opt out of USS within three months of taking up appointment and will then be treated as if they had never been a member of the scheme. After three months members of staff who wish to withdraw from USS during their employment will be required to give a minimum of 28 days' notice in writing to the University. Any member of staff who wishes to opt out should contact the Pensions Section, Finance, in the first instance ([pensions@strath.ac.uk](mailto:pensions@strath.ac.uk)). Please note that if you are a member of Pensions Plus and withdraw from USS with less than two years of membership, or cease employment with the University and have less than two years of USS membership, the option of a refund of pension contributions will not be available to you. Instead, USS must provide you with a pension benefit that is payable from your Normal Pension Age. Regardless of whether you participate in Pensions Plus, if you are a member of the pension scheme for two years or more you are not entitled to a refund of pension contributions on leaving the scheme, you will be entitled to a pension benefit.

The University reserves the right to alter or withdraw Pensions Plus as it sees fit or as required to comply with legislative changes. Withdrawal or amendment of Pensions Plus will not affect your membership of USS. If you do not wish to participate in Pensions Plus but wish to remain in

the pension scheme please contact the Pensions Team who will provide you with a non-participation form.

Information regarding pension scheme membership can be found on the Pensions pages of the University's website. Full information regarding USS can be found on the USS website – [www.uss.co.uk](http://www.uss.co.uk)

## 7. PLACE OF WORK AND RESIDENCE

Members of staff will be based on the John Anderson Campus, unless otherwise stated in the letter of appointment. The Department/School in which the post is initially placed will be specified in the letter of appointment although there will be an expectation to work at such other places as required in the course of employment.

If the need arises for members of staff to work outside the UK for a period (or periods) of more than one month then such arrangements will be subject to mutual agreement. Members of staff would then be provided with a statement in advance setting out the terms covering such periods of employment.

The University does not normally place specific restrictions upon the place of residence of members of staff. All staff are, however, expected to reside in a location which is compatible with the satisfactory fulfilment of all the duties associated with their appointment.

## 8. CONSULTANCY/FURTHER ACTIVITIES

To support the strategic objectives of the University and to facilitate individual professional development, the University encourages staff to engage in professional activities with outside bodies related to their field of work. In many cases, such activity will be approved on the basis that it represents University knowledge exchange activity and should therefore be treated as part of the individual's overall workload and managed through the University's systems. It is also recognised that there will be some cases where an activity is entirely separate from the University and should thus be notified/approved as a personal business activity. For further information please refer to the "University Procedure in relation to Work for Outside Bodies including Consultancies", which forms part of the employment contract and can be accessed at [www.strath.ac.uk/hr](http://www.strath.ac.uk/hr).

## 9. DISCIPLINARY AND GRIEVANCE PROCEDURES

Further information on the University's disciplinary and grievance procedure can also be found at [www.strath.ac.uk/policies/hr](http://www.strath.ac.uk/policies/hr) or on request from Human Resources.

## 10. NOTICE AND TERMINATION

Members of staff are employed on the conditions indicated in individual letters of appointment and any accompanying papers. The University is not obliged to give notice of termination or continue any employment beyond the end of that period. Where the period of the contract of employment is for one year or less it may be terminated short of the fixed term period by one months notice on either side. Where the period of the contract of employment is for more than one year, or where there have been a further contract or series of contracts immediately consecutive, the employment may be terminated short of the fixed term period by three months' notice on either side, except during the probationary period when the notice period is one month.

If the appointment is for a fixed term it will expire at the end of the period without the necessity for notice.

Revised April 2024