Research Associate in Organic Chemistry (Collins & Clayden Groups)

1 JOB DESCRIPTION

Faculty / School or Division: Faculty of Science, School of Chemistry
Faculty/School or Division Address: School of Chemistry, Cantock's Close, Clifton, BS8 1TS

Job Family:	**Research Associate**		
Grade/Pathway:	Grade I	**Salary range:**	£33,797 - £38,017
Hours of work:	35 hours per week	**Contract type:**	Open ended (with funding confirmed for 36 months)
Work pattern:	Full time	**Vacancy Reference Number: ACAD104573**	

1.1 Main Job Purpose

The research project entails the development of autonomous rotary molecular motors that exhibit continuous directional rotation about carbon–carbon single bonds. The motors will be driven by biocatalytic processes, using enzymes to mediate concurrent opposing stereoselective redox processes. A range of analytical, mechanistic, and computational methods will be employed to analyse the out-of-equilibrium behaviour of the system and to confirm the molecular-level directional motion. The research associate will also investigate the incorporation of the motor systems into more complex environments, amplifying the controlled motion at the single molecule level into measurable effects at the macroscopic scale. The research project is funded by the Leverhulme Trust and is co-supervised by Dr Beatrice Collins (http://www.bris.ac.uk/chemistry/people/beatrice-s-collins/overview.html) and Professor Jonathan Clayden (https://claydenchemistry.net/).

1.2 Main Statement of Responsibilities

Research Responsibilities

- Undertaking research into the development of autonomous rotary molecular motors using an enzymatic biocatalysis approach. Research will include the synthesis of the target motor structures, identification of compatible concurrent oxidation/reduction processes, assessment of stereoselectivity in these processes, and analysis of the resultant kinetically stable out-of-equilibrium steady states through a number of analytical techniques.

- Writing reports and contributing towards the drafting of scientific papers, including collating supporting information. Scientific communication through presentation of results in group

meetings, school-wide research seminars and at scientific conferences. Maintaining an up-to-date knowledge of relevant literature related to the research project.

- Regular submission of written reports on experimental results. Accurate recording and interpretation of experimental results. Keeping detailed characterisation records for publication.

- Co-ordination of your own work and day-to-day research activities. Active engagement with the planning and development of the research project and with other research programmes in the group.

- Contributing to the day-to-day supervision of PhD and undergraduate student projects.

Administration Responsibilities

- The research associate will be expected to conduct all necessary administrative tasks associated with the successful progress of the research project (accurate data recording, written reports, papers, conference papers and presentations, up-to-date literature knowledge). The successful candidate will also be expected to perform some administrative tasks associated with the smooth running of the research group (ordering consumables and chemicals, actively engaging in research meetings etc.). The research associate will be encouraged to undertake relevant training and development activities to support their career development.

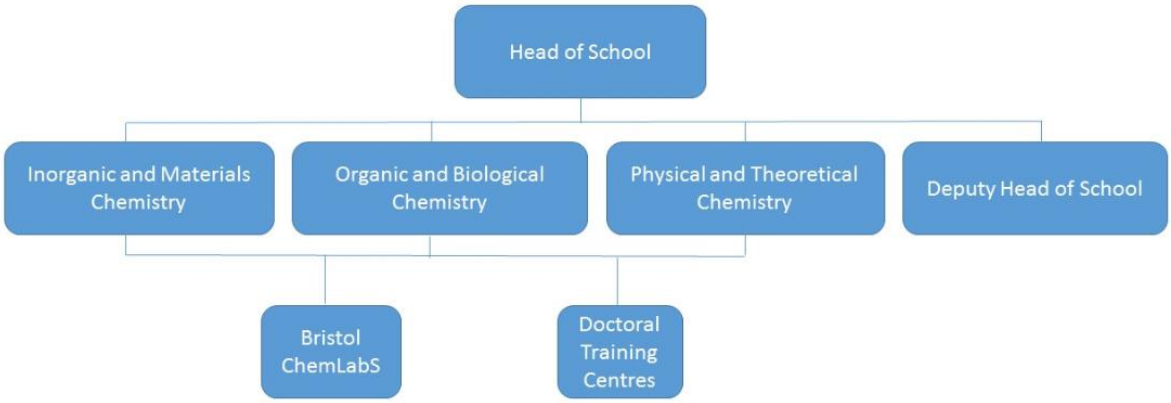
Teaching Responsibilities

As this role is a Pathway 2 (Research) role, there are no formally specified teaching duties required of the role-holder. However, other commitments permitting, the role-holder may be given development opportunities to undertake activities such as teaching on Masters and Doctoral programmes and/ or supervising MSc dissertations within the School of Chemistry, as appropriate.

1.3 Relationships

Line manager: Dr Beatrice Collins

1.4 Organisation Charts



1.5 Job Hazards/Safety Critical Duties (Pre-employment health screening)

The following duties are an intrinsic part of the role and any offer of employment will be conditional upon satisfactory health screening by the University Occupational Health Service:

• Safe handling of potentially toxic/harmful chemicals • Safe handling of possible skin and respiratory irritants including those classified as: • Skin Corrosion Category 1A, 1B or 1C • Skin Irritation Category 2 • Chemicals assigned the Hazard Phrases: • H314 Causes severe skin burns • H315 Causes skin irritation • H316 may cause mild skin irritation • H335 May cause respiratory irritation • Working safely with sensitising chemicals including those classified as: • Category 1, 1A and 1B skin sensitisers • Category 1, 1A and 1B respiratory sensitisers • Chemicals assigned the Hazard phrases: • H317 May cause allergic skin reaction • H334 May cause allergy or asthma symptoms or breathing difficulties if inhaled. • Safe working to avoid exposure to dusts or activities which may give rise to excessive dust e.g. • Silica dusts • Safe handling of cytotoxic substances • Formaldehyde • Glutaraldehyde • Regular use of latex or nitrile gloves.

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2 PERSON SPECIFICATION

2.1 Relevant Experience, Skills and Knowledge

The experience, skills, knowledge and qualifications outlined below provide a summary of what is required to carry out this job effectively. They also form the selection criteria on which the decision on who to appoint will be made. Please ensure that you show how you meet the criteria outlined below in your application.

Essential

- Experience in modern synthetic chemistry, including the design and execution of multi-step syntheses and reaction optimization.

- The ability to conduct day-to-day experimental work safely and efficiently without close supervision, including the accurate and reliable recording of experimental results.
- The ability to analyse and interpret experimental results through the use of methods such as NMR.
- The ability to work independently and effectively manage one's own time.
- The ability to work as part of a wider research team.
- Enthusiasm for learning new techniques required for the realization of the project aims.

Desirable

- Experience in the field of biocatalysis or in the use of stereoselective enzymatic processes.
- Engagement with the broader interests of the research groups, e.g. interest in, and enthusiasm towards, the field of artificial molecular machines and complex functional molecular systems, mechanistic analysis, and evaluation of kinetic parameters.
- Experience of mentoring junior members of a research team.

2.2 Relevant Qualifications

Essential

- A good honours degree (or equivalent) with relevant subject knowledge and research experience.
- A relevant postgraduate research degree (PhD or DPhil) in organic chemistry or to be working towards one.

Desirable

- A first degree in chemistry.

2.3 Communication and Interpersonal Skills

Essential

- Excellent written and oral communication skills to allow the dissemination of results arising from the research project to a wide scientific audience.
- The ability to work effectively within a team of researchers and to contribute towards a supportive working environment.
- The ability to communicate scientific ideas clearly so as to facilitate productive and innovative discussions regarding the project direction.

Desirable

- Necessary skills for assisting in the supervision of junior researchers.

2.4 Additional Criteria

Desirable

- Evidence of research capabilities through published work in peer-reviewed journals (or manuscripts under preparation).
- Excellent organisational skills.

3 CAREER PATHWAY AND OTHER RELEVANT INFORMATION

3.1 Career Pathways

All members of academic staff have a clear career pathway involving a series of levels with distinct role profiles, each with its unique requirements. Each profile sets out what is expected of an academic at the particular level. The role profiles also set out a collection of competencies expected for each level. Progression or promotion to the next level will occur after these competencies have been attained and where a role at the higher level is available.

The academic pathways are as follows:

Career Pathway One – academic roles that combine teaching, research and administrative duties.

Career Pathway Two – academic roles focusing on research and associated administrative duties.

Career Pathway Three – academic roles focusing on teaching and associated administrative pathways

This post is located on Pathway Two. Role Summaries setting out what is expected of an academic at each particular profile level on pathway two can be found below. Please note that an appointment may be made at any level of the pathway.

A schematic diagram of the career pathways can be found at http://www.bristol.ac.uk/hr/grading/academic/.

For Pathway Two roles progression to the next level will only occur where a role has been identified as being eligible for progression, having reached the relevant point on the salary scale and after the relevant competencies have been attained. A progressable role is a role at Level b or Level c that has been determined as being eligible for progression by the Head of Department, based on departmental needs, priorities and funds. Individuals in progressable roles at Level b or Level c are expected to develop their skills, knowledge and experience in order to ultimately progress to Level c or Level d, as applicable. A non-progressable role is one either at Level a (which are not subject to formal progression arrangements, although there may be opportunities to develop into a Level b role, based on departmental needs, priorities and funds), or at Level b or c for which the Head of Department has identified an ongoing need at that particular level. Movement to Level e will be by promotion only.

3.1.1 Role Summaries

Research Associate (Level a)
Role holders at this level are concerned with *assisting* an individual research leader or team to conduct a particular study (or group of studies). They will generally be involved in data generation and/or collection using standard and well-defined methods developed by others. They will be working under close supervision by, and direction from, a more senior researcher, who will be ultimately responsible for the project. This may be the entry level for some staff who are expected to train and/or develop to take on more senior researcher roles. Role holders will be provided with academic and pastoral support within the department (including counselling on realistic career opportunities) and training

will be available designed to develop their competences and to prepare them to take on more responsibilities associated with a higher grade.

Senior Research Associate (Level b)
Role holders at this level will be experienced and professional researchers (or have considerable professional experience) and will be specialists in a particular area or methodology, drawing upon knowledge gained from postgraduate research and/or working within a Level a role. They will be *associated* with a particular project (or projects) and will contribute ideas, and/or enhancement of techniques or methodologies. They will be expected to do some writing for dissemination outside the Department. They will still be working under supervision, but will be expected to take significant initiatives in their work and consult with the Principal Investigator over the details of the project. They may, where practical, contribute to the department's teaching, through supervision of projects, overseeing practical classes, or taking small group classes. They will be provided with academic and pastoral support within the department and training will be available designed to develop their competences (including counselling on realistic career opportunities) and prepare them to take on more responsibilities associated with a higher grade.

Research Fellow (Level c)
Role holders at this level will have substantial experience of research (normally not less than six years). They will initiate and take responsibility for some research projects and may be Principal Investigators or, where a Research Council does not permit this, act as though they were Principal Investigators. They will be involved in administration relevant to their projects (e.g. helping to prepare bids for research funding), managing other researchers and monitoring research budgets. They will be expected to be undertaking research individually and/or collectively and to be advancing the state of knowledge and understanding within their particular area of expertise. They will be publishing regularly in high quality outlets. They are likely to provide some teaching support for the department (consonant with the terms of their funding). They will be expected to be establishing a growing reputation within their particular research field and academic discipline and to be developing and demonstrating intellectual independence.

Senior Research Fellow (Level d)
Role holders at this level will have extensive experience in research and research management. They will normally be Principal Investigators, leading collaborative research bids and research teams, or driving forward innovative research themselves. They will be involved in scholastic projects (e.g. editing journals and academic books), and be making a significant leadership and/or management contribution within their department or the wider university, to be participating in national/international academic networks and conferences. They may be transferring their knowledge through some teaching and/or supervision to undergraduate or graduate students (consonant with the terms of their funding). Role holders at this level will be independent researchers and will have an established national and growing international reputation within their academic discipline generally and research field in particular.

Professorial Research Fellow (Level e)

Role holders at this level will have very extensive experience of research leadership and related management/administration. They will enjoy a wide recognition for their expertise within the academic community internationally (as evidenced by conference invitations, journal editorships, office holding in specialist groupings, associations with appropriate Research Councils etc.). They will have made recognised and significant contributions to the developing knowledge and understanding of their research area. They will already have responsibilities for the creation, initiation, development and overall management of significant research programmes. They will 'profess' their discipline within

the Department, as appropriate and consonant with the terms of their funding. They may also carry significant leadership roles within the Faculty or University.