



UNIVERSITY OF OXFORD

DEPARTMENT OF CHEMISTRY

POSTDOCTORAL RESEARCH ASSISTANT POSITION

Porphyrin molecular wires for nanoelectronics

Salary Scale Research Assistant Grade 7: £25,889 - £31,840 p.a.

Reference DM07002/HLA

Summary

Organic Chemistry together with Inorganic Chemistry, Physical and Theoretical Chemistry, and Chemical Biology forms the largest University Department of Chemistry in the country, with 72 faculty staff. It was awarded 5* (the highest grade) in the latest Research Assessment Exercise, an evaluation that recognises its considerable international standing.

In Chemistry as a whole, each year some 160 chemists graduate after a four-year course which includes a year of research. About 80 graduates receive doctorates annually. The Oxford Chemistry course has been judged to be 'excellent' following a Teaching Quality Audit (TQA) by the Higher Education Funding Council for England (HEFCE).

Within Organic Chemistry there are 18 academic staff, plus academic related staff, departmental assistants and approximately 180 researchers (including Part II students (4th year chemistry undergraduates), postgraduate students, postdoctoral research associates, research fellows and other visitors). There are a large number and diversity of research projects currently being undertaken, with funds from research councils, industry and charities.

Organic Chemistry shares the new purpose-built and award-winning Chemistry Research Laboratory, with members of Inorganic Chemistry, Physical and Theoretical Chemistry and Chemical Biology. The building has been designed to provide a flexible and interactive research environment capable of supporting the widest possible range of research activity and has primary laboratory modules on each floor with adjacent dedicated write-up space. It provides excellent facilities for research including extensive NMR and Mass Spectrometry services which are some of the best available to organic chemists in the country. There are seven NMR spectrometers with operating frequencies in the 200–500 MHz range, some of which have facilities for multinuclear and variable-temperature acquisitions, pulsed field gradient experiments and automated operation (<http://tuna.dp.ox.ac.uk/~tim/nmrfacility.htm>). We also have seven mass spectrometers, three of which are open access instruments for GLC-MS, HPLC-ESI-MS and APCI-MS. The remaining four instruments, ESI-LCT, BioQ-II-ZS, Autospec-5000-OA-Tof and Tof-Spec 2E are operated both for service MS and research. New SRIF facilities include a 9.4T FTICR and 800MHz NMR.

Research Project

The successful candidate will work with Professor Harry Anderson on the design and synthesis of conjugated porphyrin oligomers for use as single molecule wires for testing the fundamental concepts of nanoelectronics. This is part of a collaboration with Emyr Macdonald and Martin Elliot (Cardiff University, School of Physics and Astronomy) and Richard Nichols, Don Bethell and Simon Higgins (Liverpool University, Department of Chemistry). Other personnel are pursuing more physical aspects of the project in Cardiff and Liverpool, on the same EPSRC grant. The post holder will be primarily concerned with the design, synthesis and characterisation of new conjugated porphyrin oligomers for testing as molecular wires. They will also have the opportunity to learn about the photophysics and nanoelectronics of the materials they prepare by working closely with other members of the team.

The post is available from 1st June 2007 for 1 year initially with the possibility of an additional 17 months.

Recent publications in this area include: **“Probing the efficiency of electron transfer through porphyrin-based molecular wires”**, M. U. Winters, E. Dahlstedt, H. E. Blades, C. J. Wilson, M. J. Frampton, H. L. Anderson and B. Albinsson, *J. Am. Chem. Soc.* **2007**, 129, in press (DOI: 10.1021/ja067447d);

“Template-directed synthesis of a π -conjugated porphyrin nanoring”, M. Hoffmann, C. J. Wilson, B. Odell, and H. L. Anderson, *Angew. Chem. Int. Ed.* **2007**, 46, in press (DOI: 10.1002/anie.200604601);

“Strong Cooperative Enhancement of Two-Photon Absorption in Double-Strand Conjugated Porphyrin Ladder Arrays”, M. Drobizhev, Y. Stepanenko, A. Rebane, C. J. Wilson, T. E. O. Screen and H. L. Anderson, *J. Am. Chem. Soc.* **2006**, *128*, 12432–12433.

Additional information about the laboratory can be found at: <http://users.ox.ac.uk/~hlagroup>.

Candidates will have a PhD in Chemistry or will have submitted a thesis prior to taking up the appointment.

Selection Criteria

The successful post holder will be the person who best satisfies the following criteria:

1. Hold a PhD in Chemistry (or have submitted thesis prior to taking up the appointment).
2. Have practical skills and experience of multi-step organic synthesis. Experience the following areas would also be valuable: (a) porphyrin synthesis, (b) synthesis and characterisation of π -conjugated oligomers and organic semiconductors, (c) use of HPLC and GPC techniques.
3. Demonstrate competence in those areas, as judged by publications (or papers in press) in high quality peer reviewed journals.
4. Be able to plan and execute synthetic schemes successfully and safely with minimal supervision.
5. Be able to work supportively in a laboratory environment with junior co-workers.
6. Have the ability to analyse and optimise reaction processes, and the ability to select and execute appropriate purification techniques, particularly chromatographic methods for isolating analytically pure compounds on a range of reaction scales (5 mg to 5 g).
7. Have the ability to make accurate and reliable records of work carried out.
8. Be able to present work to other chemists in a clear and concise manner.
9. Have a broad knowledge of Chemistry. Evidence will be sought of deeper understanding of the applicant's previous fields of research. The candidate will be expected to have made independent intellectual and practical contributions to previous research projects.

Pay and Benefits

The successful candidate will be appointed to the Research Assistant Grade 7 (salary range £25,889 - £31,840 p.a.). It is anticipated that you will be appointed at the lower end of this scale (between £25,889 - £27,465 p.a. - according to experience) and if that is so, your salary will automatically be increased each year until you have reached the top point. Increases beyond this point may be available in certain cases. There is also an annual 'cost-of-living' salary review, which normally takes place in summer each year.

The postholder will be entitled to 38 holidays per year (inclusive of bank holidays). The department closes for five days at Christmas, and this closure period is included in the annual leave entitlement. The leave year runs from 1 October to 30 September.

The appointment will be subject to (i) the return of a completed medical questionnaire which is acceptable to the University, (ii) the provision of an original document which indicates your right to work in the UK, and (iii) the completion of an initial probationary period of 6 months, during which the notice period will be one month on either side. Once the appointment has been confirmed, the notice period will be three months on either side.

The University's retirement age is 65. Subject to the University's Statement of Pensions Policy which is issued with letters of appointment, new staff in this grade are automatically treated as members of the Universities Superannuation Scheme unless they give notice in writing to say they do not wish to take part in the scheme.

In addition the University offers further benefits

- **Childcare** – the University has several subsidised nurseries for under-fives, a holiday play scheme, tax and national insurance savings schemes, and is looking to expand its facilities. For further information see www.admin.ox.ac.uk/eop/child.
- **Parenting** – As well as providing childcare facilities, the University has generous maternity, paternity and adoption leave schemes to help new parents on its staff.

- **Cultural and religious needs** – The University respects the cultural and religious lives of its staff. If you need time away from work, or special facilities, and can give plenty of notice for arrangements to be made, this will always be considered.
- **Travel arrangements** – an interest-free season ticket loan scheme operates for bus or train season tickets. Annual passes for Oxford Bus Company routes are available at discounted rates.
- **Use of University facilities** – All University staff can use the study facilities provided by University libraries and museums; join the University Club, a sports and social club which has its own bar, café, and reading room; and make use of the University Sports Complex and the Pulse fitness centre.
- **Discounts** – A number of discounts are available to University staff e.g. for insurance, holiday travel, and computer equipment.

The range of benefits is continuously reviewed and extended.

Equal Opportunities

As an Equal Opportunity employer, the University positively encourages applications from people of different backgrounds. All jobs are filled in line with the equal opportunities code of practice, which helps the University to make sure that men and women, people of different races, and those with disabilities are all treated fairly.

POLICY STATEMENT

The policy and practice of the University of Oxford require that all staff are afforded equal opportunities within employment. Entry into employment with the University and progression within employment will be determined only by personal merit and the application of criteria which are related to the duties of each particular post and the relevant salary structure. In all cases, ability to perform the job will be the primary consideration. Subject to statutory provisions, no applicant or member of staff will be treated less favourably than another because of his or her gender, marital or civil partnership status, sexual orientation, religion or belief, racial group, age, or disability.

If you have any questions about equal opportunities at the University of Oxford, please visit our web-site at www.admin.ox.ac.uk/eop/policy/index.shtml

Data Protection

All data supplied by applicants will be used only for the purposes of determining their suitability for the post, and will be held in accordance with the principles of the Data Protection Act 1998 and the University's Data Protection Policy.

How to Apply

Four copies of applications, which should consist of 4 copies of your covering letter showing how you meet the selection criteria set out in the further particulars, and 4 copies of your curriculum vitae with the names and addresses of two academic referees, at least one of whom should be your current line manager or supervisor, **and who may be contacted prior to interview**, should be sent to :

Joy Cooke
(DM07002/HLA)
Chemistry Research Laboratory
University of Oxford ,
Mansfield Road
Oxford OX1 3TA,

by the closing date of **16th April 2007**.

Please note the department does not accept e-mailed applications. They must be either hard copy in the post, or can be faxed to +44 (0) 1865 275708. **Please ensure that your details arrive on time, as those received after the closing date cannot be considered.**

If possible, short-listed candidates will be interviewed in the period 30 April – 4 May; during these interviews each candidate will be expected to give a 20 minute research presentation.

The University will assume that it is free to approach referees at any stage unless the candidate's application stipulates otherwise (i.e. candidates who wish a referee or referees to be approached only with their specific permission and/or if they are being called for interview on the final short list or are in receipt of a conditional offer, are asked to state such requirements explicitly alongside the details of the relevant referee(s)). But, as stated above, you must ensure that we are able to contact your current line manager or supervisor prior to interview. The University reserves the right to screen individuals for employment. Any such screening would be discussed with an individual in advance of its taking place.

13/03/2007
DM07002/HLA