

The University of Manchester

THE UNIVERSITY OF MANCHESTER

PARTICULARS OF APPOINTMENT

FACULTY OF SCIENCE & ENGINEERING

SCHOOL OF NATURAL SCIENCES

DEPARTMENT OF CHEMISTRY

RESEARCH ASSOCIATE IN X-RAY SPECTROSCOPY

VACANCY REF: SAE-016907

Salary: Grade 6 £32,816 to £40, 322 per annum (according to relevant experience)

Hours: 1 FTE

Duration: Fixed term from 03 January 2022 until 02 January 2025

Location: Oxford Road, Manchester

Enquiries about the vacancy, shortlisting and interviews: Manager: Dr Michael L. Baker

Email: michael.baker@manchester.ac.uk

Background and Purpose of the Position

Applicants are invited to pursue a three-year postdoctoral appointment at the University of Manchester applying modern X-ray spectroscopies to the study of actinide electronic structure within the multidisciplinary research group of Dr Michael L. Baker. This exciting project aims to measure and advance understanding of actinide electronic structure, bonding and magnetism. The project will involve the use of ligand K-edge X-ray absorption, resonant inelastic X-ray scattering (RIXS) and X-ray magnetic circular dichroism (XMCD) measurements at Diamond Light Source, the European Synchrotron Radiation Facility and Synchrotron Soleil. The quantification of electronic structure will be ascertained through the simulation of spectra using atomic multiplet theory, density functional theory and complete active space self-consistent field calculations.

The successful candidate will be a highly capable, motivated and independent researcher who is able to conduct a balance of experimental and computational research. The position will require the supervision of PhD and master students and the management of a team at synchrotron beamtimes.

Responsibilities, Accountabilities or Duties



A range of duties required include:

- Conduct both individual and collaborative research projects.
- Scientific writing for the write up of research work for publication.
- Planning, design and submission of experiment beamtime proposals.
- Present research group findings at international conferences and workshops.
- Management of a research budget and research equipment purchases.
- Continually update knowledge and understanding in field or specialism.
- Translate knowledge of advances in the subject area into research activity.
- An ability to pick up new techniques and methods and apply them to research.
- Use initiative and creativity to identify areas for research, develop new research methods and extend the research portfolio.
- Use creativity to analyse and interpret research data and draw conclusions on the outcomes.
- Contribute to collaborative decision making with colleagues in areas of research.
- Plan and manage own research activity in collaboration with others.
- Work with colleagues on joint projects.
- Attend and contribute to group meetings.
- Be involved in the supervision of student projects.
- Assist in the development of student research skills.
- Communicate complex information, orally, in writing and electronically.
- Communicate material of a specialist or highly technical nature.
- Build internal contacts and participate in internal networks for the exchange of information and to form relationships for future collaboration.
- Use research resources, laboratories and workshops as appropriate.
- Balance, with help, the competing pressures of research and administrative demands and deadlines.
- Be aware of the risks in the work environment and their potential impact on their own work and that of others.

Person Specification

Essential

- Have, or be about to obtain, a relevant PhD (or equivalent).
- Experience in X-ray spectroscopy.
- Experience in atomic multiplet theory, density functional theory and/or CASSCF calculations.
- Ability to manage synchrotron beamtimes.
- Excellent communication and interpersonal skills.
- Excellent time management and organisational skills.
- Ability to work independently and as part of a team.
- Ability to liaise confidently and effectively with a range of individuals.
- Flexible approach to dealing with research problems as they arise.
- Willingness to learn and develop.
- Ability to present in both written and oral publications.
- Ability to meet deadlines.



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- The ability to evaluate complex data.
- Understand equal opportunity issues as they may impact on areas of research content.

Desirable

- Expertise in X-ray absorption, emission and/or resonant inelastic X-ray scattering.
- Expertise in atomic multiplet theory, density functional theory and/or CASSCF calculations.
- Experience in the preparation of air sensitive samples for beamtime using a glovebox.
- Experience in the handling radioactive samples.
- Experience in molecular magnetism.
- Experience in complementary characterisation methods, including magnetometry and electron paramagnetic resonance.
- Experience with a range of high-performance computing resources.
- Experience in electronic structure of actinide molecules.
- Knowledge of scripting and/or coding.
- Experience in supervision of undergraduate and postgraduate researchers.
- Strong journal publication record.