

Job Title: Research Associate
Grade: 7
Salary: £38,205 to £42,978 per annum, pro rata if part-time, due to funding restrictions.
Department: School of Chemistry
Hours/Contract: Full time or job share, fixed-term contract until 30 September 2027
Job Family: Teaching and Research
Reference: 10398

Role Purpose

This 3-year postdoctoral research associate position will focus on groundbreaking experiments investigating quantum vortices in superfluid helium nanodroplets using infrared spectroscopy. The PDRA will operate and optimize the helium nanodroplet apparatus to generate droplets containing quantum vortices, and conduct infrared depletion spectroscopy experiments on molecules embedded in these droplets. They will analyze spectroscopic data to identify signatures of vortex-molecule interactions and the Bernoulli potential, collaborating with theoretical partners to model and interpret results. The PDRA will prepare manuscripts and present findings at conferences, playing a crucial role in achieving the project's goal of first experimental detection of the Bernoulli potential associated with quantum vortices. This work aims to significantly advance understanding of quantum fluids and vortex dynamics. The ideal candidate will have a strong background in experimental physical chemistry or low-temperature physics, with expertise in spectroscopy and vacuum systems.

You will take a leading role in experimental design and determining the direction of the project in line with reaching the research goals, developing your own independent research and providing guidance to the other members of the team in the area of superfluid helium and nanoscience.

Main Duties and Responsibilities

- Develop and carry out an independent original research programme, giving guidance to other members of the team
- Plan and carry out the work programme for own research contribution, using methodology and techniques appropriate to this type of research
- Contribute to directing the work of the team (i.e., the PhD student and the technician) including prioritisation of tasks
- Writing up research findings for dissemination amongst the research team and broader international community
- Analysis of data and extrapolation of new themes/ strands in area of research
- Take a lead in presenting results at scientific meetings in the UK and overseas
- Participate in general laboratory activities to ensure the efficient functioning of the lab
- Assist with the training of new members of the lab, including undergraduate students and work experience trainees
- Report to the PI, ensuring the progress of the project towards the goal identified.





Internal and External Relationships

- Regular meetings with members of the research group
- Meeting members of the School for critical discussion of the research and exchange of new ideas and approaches that might benefit the research
- Liaison with external collaborators
- Participation of training, development, and publicity activities.

Planning and Organising

Plan research activity as outlined in the project proposal and coordinate the work of the PhD students.

Qualifications, Knowledge and Experience

Essential

- Educated to PhD level (or equivalent) in Physics, Physical Chemistry, Materials Science, Nanoscience or equivalent professional qualifications and experience *
- Experience in standard techniques of ultrahigh vacuum systems, laser spectroscopy*
- Evidence of research productivity (e.g., research publications in peer review journals and presentations)
- Evidence of involvement in innovative research in the field of instrumental design, physical chemistry and/or physics, material science.
- Previous knowledge of physical chemistry and nanoscience*
- Good working knowledge of relevant IT Systems including MS Office

Desirable

- Experience of working with superfluid helium droplets
- Experience in fabrication and characterization of nanomaterials

Skills, Abilities and Competencies

Essential

- Ability to work well in a team and on own initiative
- Excellent written* and oral communication skills necessary to communicate complex information clearly
- Ability to plan, implement and deliver programmes of work
- To be able to demonstrate research potential and enthusiasm of the subject area and deliver high quality research
- Quick learner





Desirable

- Problem-solving skills;
- Teamwork and interpersonal skills
- Evidence of continued personal development of subject expertise
- The ability to demonstrate leadership skills throughout the team including problem solving (e.g., methodology and techniques)

****Criteria to be used in shortlisting candidates for interview***

Reason for Fixed Term Contract

The reason for the fixed term contract is stated in section 1.9 in the summary of contractual terms in your contract of employment.

Criminal Declaration

If you become an employee, you must inform your manager immediately, in writing, if you are the subject of any current or future police investigations/legal proceedings, which could result in a criminal offence, conviction, caution, bind-over or charges, or warnings.

Supporting University Activities

As a University of Leicester citizen, you are expected to support key university activities such as clearing, graduation ceremonies, student registration and recruitment open days. We expect all staff as citizens to work flexibly across the University if required.

University Values

Inclusive - We are diverse in our makeup and united in ambition. Our diversity is our strength and makes our community stronger.

Inspiring - We are passionate about inspiring individuals to succeed and realise their ambitions. We challenge our community to think differently, to get involved, and to constantly embrace new ideas.

Impactful - As Citizens of Change we will generate new ideas which deliver impact and empower our community

Equity and Diversity

We believe that equity, diversity and inclusion is integral to a successful modern workplace. By developing and implementing policies and systems that challenge stereotypes across all aspects of our work, we have a culture that recognises and values the diverse contributions of our staff which benefits everyone. Our strong values of inclusivity and equity support our efforts to attract a diverse range of high quality staff and students, and identify our University as a progressive and innovative workplace that mainstreams equity, diversity and inclusion.

