

<b>Job title</b>	Research Fellow in Electron Diffraction (Title will be 'Research Associate' where an appointment is made before PhD is completed)	<b>Job family and level</b>	Research and Teaching Level 4 (Appointment will be Level 4 Career training grade where an appointment is made before PhD has been completed)
<b>School/ Department</b>	Nanoscale and Microscale Research Centre (nmRC)	<b>Location</b>	Nanoscale and Microscale Research Centre (nmRC), Cripps South Building, University Park, Nottingham, NG7 2RD.

## Purpose of role

This role will have specific responsibility for developing research, methodology and protocols for a research project in microcrystal electron diffraction (microED). The person appointed will be expected to plan and conduct work using approaches or methodologies and techniques appropriate to the type of research, and will be responsible for writing up their work for publication. The post holder will utilise a complementary pair of EPSRC funded state-of-the-art, direct detection & high-performance electron cameras ([EP/W006413/1](#)) within the nmRC, along with scanning TEM (STEM) diffraction system control, and an associated high-tilt, cryo-transfer holder (HT-CTH). This capability has been configured to facilitate innovative correlated workflows for low-dose, high-sensitivity, STEM-tomography, microED and motion corrected *in situ* / *in operando* investigations of a wide range of molecular materials and soft matter samples in their near native-state. This will enable a broad range of interdisciplinary materials science research programmes at the University of Nottingham.

The person appointed will have the opportunity to use their initiative and creativity to identify areas for research, develop research methods and extend their research portfolio.

	<b>Main responsibilities</b> (Primary accountabilities and responsibilities expected to fulfil the role)	<b>% time per year</b>
1	To plan and conduct research using recognised and new approaches, methodologies and techniques within microED.	30%
2	To apply the new methodologies to a range of materials and train researchers in microED techniques.	20%
3	To analyse and illuminate data, interpret results, evaluate existing literature and bring new insights to research area.	15%
4	To write up research work for publication and/or contribute to the dissemination at national/international conferences, resulting in successful research outputs.	10%

5	To identify opportunities and assist in writing bids for research grant applications. Prepare proposals and applications to both external and/or internal bodies for funding, contractual or accreditation purposes.	5%
6	To build relationships with both internal and external contacts in order to exchange information, to form relationships for future collaborations and identify potential sources of funds and/or opportunities for collaboration.	5%
7	To co-ordinate the operational aspect of research networks, for example, arranging meetings and updating web sites, and contribute to collaborative decision making with stakeholders.	5%
8	To provide support, guidance and supervision to other staff, where appropriate in own area of expertise.	5%
9	To utilise and contribute to organising research resources and facilities, laboratories and workshops as appropriate.	5%

## Person specification

	Essential	Desirable
<b>Skills</b>	<ul style="list-style-type: none"> <li>▪ Excellent oral and written communication skills, including the ability to communicate with clarity on complex information.</li> <li>▪ High analytical ability to process and illuminate data, and interpret results.</li> <li>▪ Ability to creatively apply relevant research approaches, models, techniques and methods, as evidenced by peer-reviewed publications commensurate with career stage.</li> <li>▪ Ability to build relationships and collaborate with others, both internally and externally.</li> <li>▪ Ability to assess and organise resource requirements and deploy effectively.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Proficiency in Python.</li> </ul>
<b>Knowledge and experience</b>	<ul style="list-style-type: none"> <li>▪ Experience in the method development of techniques or approaches for the determination of crystallographic structures.</li> <li>▪ Hands-on experience in use of diffraction instrumentation applied to materials structure determination.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Knowledge and practical experience in electron microscopy techniques.</li> <li>▪ Experience of developing new approaches, models, techniques or methods in research area.</li> </ul>
<b>Qualifications, certification and training (relevant to role)</b>	<ul style="list-style-type: none"> <li>▪ PhD awarded, or near to completion, in an area related to the engineering, physical or life sciences.</li> </ul>	



Athena  
SWAN  
Silver Award



Race  
Equality  
Charter  
Bronze Award



COMMITTED

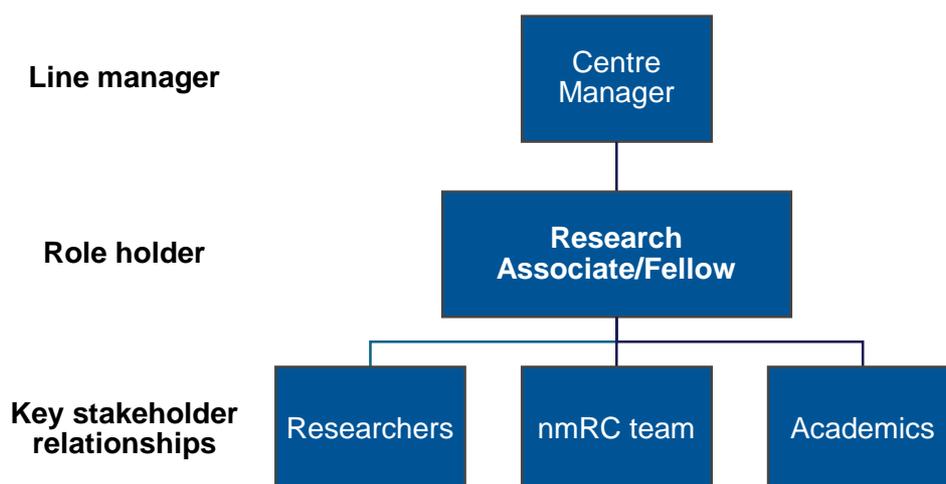


## Expectations and behaviours

The University has developed a clear set of core expectations and behaviours that our people should be demonstrating in their work, and as ambassadors of the University's strategy, vision and values. The following are essential to the role:

- Valuing people** Is friendly, engaging and receptive, putting others at ease. Actively listens to others and goes out of way to ensure people feel valued, developed and supported.
- Taking ownership** Is clear on what needs to be done encouraging others to take ownership. Takes action when required, being mindful of important aspects such as Health & Safety, Equality, Diversity & Inclusion, and other considerations.
- Forward thinking** Drives the development, sharing and implementation of new ideas and improvements to support strategic objectives. Engages others in the improvement process.
- Professional pride** Is professional in approach and style, setting an example to others; strives to demonstrate excellence through development of self, others and effective working practices.
- Always inclusive** Builds effective working relationships, recognising and including the contribution of others; promotes inclusion and inclusive practices within own work area.

## Key relationships with others



<b>Job title</b>	Senior Research Fellow in Electron Diffraction	<b>Job family and level</b>	Research & Teaching Level 5 (Research)
<b>School/ Department</b>	Nanoscale and Microscale Research Centre	<b>Location</b>	Nanoscale and Microscale Research Centre (nmRC), Cripps South Building, University Park, Nottingham, NG7 2RD.

## Purpose of role

To lead and deliver individual and collaborative research in the area of microcrystal electron diffraction (microED) and make contribution to the direction of research programmes at the Nanoscale and Microscale Research Centre (nmRC). The post holder will utilise a complementary pair of EPSRC funded state-of-the-art, direct detection & high-performance electron cameras (EP/W006413/1), to be installed in autumn 2022 on two existing transmission electron microscopes in the nmRC, along with scanning TEM (STEM) diffraction system control, and an associated high-tilt, cryo-transfer holder (HT-CTH). This capability has been configured to facilitate innovative correlated workflows for low-dose, high-sensitivity, STEM-tomography, microED and motion corrected *in situ* / *in operando* investigations of a wide range of molecular materials and soft matter samples in their near native-state, enabling a broad range of interdisciplinary materials science research programmes at the University of Nottingham.

Low-dose / cryoEM and ultra-fast / microED strategies will be used mitigate the effects of e-beam damage, e.g. endemic to metalorganic framework investigations, providing for direct, rapid access to authoritative, sub-angstrom, structural information. Accordingly, the post holder must have excellent knowledge and practical skills of diffraction methods and a thorough understanding of computational protocols for crystal structure determination, complementing correlative low-dose/tomographic and ultra-fast/dynamic investigations. The role will be responsible for generating new intellectual understanding through the development of microED across a range of molecular materials and soft matter samples.

The post holder will sustain and pursue an independent research programme in microcrystal structure determination and will develop new concepts and ideas. Where appropriate, they will develop and win support for innovative research development proposals and funding bids. Furthermore, the contribution of the post holder is essential for developing the Centre's digital strategy and strategic collaborations with industrial and academic partners.

	<b>Main responsibilities</b> (Primary accountabilities and responsibilities expected to fulfil the role)	<b>% time per year</b>
1	To lead, plan, develop and conduct individual and/or collaborative research investigations using microED and associated capabilities. Acquire, analyse, interpret and evaluate research findings/data using approaches, techniques, models and methods selected or developed for the purpose.	30%

2	Be responsible for managing and/or monitoring assets and budgets allocated and the use of research resources to ensure that effective use is made of them. This will include training new users to safely operate and perform microED studies.	20%
3	To establish a national reputation and regularly disseminate and explain research findings through peer-reviewed publications, conferences and other appropriate media.	10%
4	To build relationships and collaborate actively with internal and external contacts, nationally and if appropriate internationally to complete research projects and to advance the discipline.	10%
5	To manage the application of a range of methodologies, approaches and techniques appropriate to the type of research personally being pursued. Where appropriate investigate and devise research methods and approaches.	10%
6	To communicate complex and conceptual ideas to those with limited knowledge and understanding as well as to peers, using high level skills and a range of media.	5%
7	To generate income by developing and winning support for innovative research proposals and funding bids.	5%
8	Be responsible for resolving problems to meet research objectives and deadlines.	5%
9	Be responsible for the safe conduct of work within work area ensuring that the nmRC's arrangements for compliance with the University Safety Policy are implemented.	5%

## Person specification

	Essential	Desirable
<b>Skills</b>	<ul style="list-style-type: none"> <li>▪ Excellent oral and written communication skills, including the ability to communicate with clarity on complex and conceptual ideas to those with limited knowledge and understanding as well as to peers, using high level skills and a range of media.</li> <li>▪ High level analytical capability to facilitate conceptual thinking, innovation and creativity.</li> <li>▪ Ability to build relationships and collaborate with others, internally and externally.</li> <li>▪ Ability to devise, advise on and manage research programmes.</li> <li>▪ Strong organisational and project management skills.</li> <li>▪ Highly motivated, self-starting individual.</li> <li>▪ Calm and positive attitude in working collaboratively with a wide range of stakeholders internally and externally, sometimes on challenging and complex multidisciplinary issues.</li> <li>▪ Excellent problem solving, IT and organisational skills including the effective deployment of resources.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Proficiency in Python.</li> </ul>
<b>Knowledge and Experience</b>	<ul style="list-style-type: none"> <li>▪ Practical laboratory skills and experience for microscale imaging and structure determination (including sample preparation, instrumentation specification and setup, experimental design and execution etc.)</li> <li>▪ Prior experience in the successful application and development of diffraction methods for microscale imaging and structure determination, e.g. X-ray or electron diffraction, evidenced by peer-reviewed publications.</li> <li>▪ Excellent understanding of microcrystal diffraction and experimental practice.</li> <li>▪ Track record of research and innovation outputs, <i>i.e.</i> peer reviewed publications, successful grants, data sets, software and/or equipment development, in the</li> </ul>	<ul style="list-style-type: none"> <li>▪ Knowledge and practical experience of electron microscopy techniques, with emphasis on STEM and microED.</li> <li>▪ Knowledge and practical skills of using cryogenic sample preparation equipment.</li> <li>▪ Experience in managing research equipment and/or laboratory space.</li> </ul>

	<p>area of diffraction methods for structure determination, commensurate with stage of career.</p> <ul style="list-style-type: none"> <li>▪ Knowledge and experience in the application of computational protocols for crystal structure determination.</li> <li>▪ Previous experience within collaborative projects involving multiple industry or academic partners.</li> </ul>	
<b>Qualifications/ Education</b>	<ul style="list-style-type: none"> <li>▪ PhD awarded in an area related to the engineering, physical or life sciences.</li> </ul>	<ul style="list-style-type: none"> <li>▪ A PhD in an area related to the microstructural characterisation of (e-beam sensitive) materials.</li> </ul>



The University of Nottingham is focused on embedding equality, diversity and inclusion in all that we do. As part of this, we welcome a diverse population to join our work force and therefore encourage applicants from all communities, particularly those with protected characteristics under the Equality Act 2010.



The University is a signatory of the Declaration on Research Assessment (DORA). As such we commit to focus on the scientific content of publications (where requested or provided as part of the recruitment and selection process) as a basis for review of quality, and consideration of value and impact of research conducted, rather than any proxy measures such as Journal Impact Factor.

## Expectations and behaviours

The University has developed a clear set of core expectations and behaviours that our people should be demonstrating in their work, and as ambassadors of the University's strategy, vision and values. The following are essential to the role:

- Valuing people** Is always equitable and fair and works with integrity. Proactively looks for ways to develop the team and is comfortable providing clarity by explaining the rationale behind decisions.
- Taking ownership** Is highly self-aware, looking for ways to improve, both taking on board and offering constructive feedback. Inspires others to take accountability for their own areas.
- Forward thinking** Driven to question the status quo and explore new ideas, supporting the team to “lead the way” in terms of know-how and learning.
- Professional pride** Sets the bar high with quality systems and control measures in place. Demands high standards of others identifying and addressing any gaps to enhance the overall performance.
- Always inclusive** Ensures accessibility to the wider community, actively encouraging inclusion and seeking to involve others. Ensures others always consider the wider context when sharing information making full use of networks and connections.

## Key relationships with others

