UNIVERSITY OF LEEDS

CANDIDATE BRIEF

Research Fellow in Fabrication and Characterisation of New Dielectric Ceramics for Power, Faculty of Engineering and Physical Sciences



Salary: Grade 7 (£34,304 – £40,927 p.a.) Due to funding restrictions, an appointment will not be made higher than £37,467 p.a.

Reference: EPSPE1050

Closing date: Sunday 31 October 2021

Fixed-term for 34 months

We will consider job share and flexible working arrangements

Research Fellow in Fabrication and Characterisation of New Dielectric Ceramics for Power Applications, School of Chemical and Process Engineering.

Are you interested in developing new dielectric materials for transport electrification within a multi-university research project? Do you want to further your career in one of the UKs leading research-intensive Universities?

New high temperature, high voltage dielectric ceramics are required for power electronics - a key enabling technology in transport electrification and the energy transition. Understanding how to unlock the potential of promising tungsten bronze structured dielectric ceramics requires a fundamental understanding of how structure (defect, crystal, nano and micro) controls dielectric charge storage characteristics under operating conditions relevant to power capacitors deployed alongside wide-band gap semiconductors in power components.

You will be part of a multidisciplinary team encompassing: electron and X-ray diffraction (Leeds and Warwick); crystal structure simulation (Durham); charge transport mechanisms (Sheffield); and power engineering (Manchester). At Leeds you will be part of a team investigating novel dopants, solid solution mechanisms, phase stability, microstructures and dielectric properties. You will also be responsible for fabricating providing high quality ceramic samples for characterisation by other partners. The project is funded by the Engineering and Physical Sciences Research Council: *New directions in high temperature dielectrics: unlocking performance of doped tungsten bronze oxides through mechanistic understanding.*

Holding a PhD (or close to completion) in solid state chemistry/materials science/physics or a closely allied discipline, you will have experience of functional ceramic processing and a detailed knowledge of composition-structure property relationships.



What does the role entail?

As a Research Fellow, your main duties will include:

- Fabricating high quality ferroelectric tungsten bronze ceramics for power capacitor applications;
- Developing and characterising new ceramic formulations;
- Co-ordinating experimental activities and developing a detailed understanding of composition-structure-property relationships;
- Collaborating with academic partners at the Universities of Warwick, Durham, Sheffield and Manchester;
- Maintaining close links with industrial advisors in the capacitor and power electronics sectors;
- Generating and pursuing independent and original research ideas in the appropriate subject area;
- Developing research objectives and proposals and contributing to setting the direction of the research project and team including preparing proposals for funding in collaboration with colleagues;
- Evaluating methods and techniques used and results obtained by other researchers and to relate such evaluations appropriately to your own work;
- Preparing papers for publication in leading international journals and disseminating research results through other recognised forms of output;
- Working both independently and also as part of a larger team of researchers, engaging in knowledge-transfer activities where appropriate and feasible;
- Maintaining your own continuing professional development and acting as a mentor to less experienced colleagues as appropriate;
- Contributing to the training of both undergraduate and postgraduate students, including assisting with the supervision of projects in areas relevant to the project.

These duties provide a framework for the role and should not be regarded as a definitive list. Other reasonable duties may be required consistent with the grade of the post.



What will you bring to the role?

As a Research Fellow, you will have:

- A PhD (or close to completion) in solid state chemistry/materials science/physics or a closely allied discipline;
- Experience of functional ceramic processing and a detailed knowledge of composition-structure property relationships;
- Experience of microstructural characterisation involving advanced electron microscopy techniques;
- Excellent critical thinking and analysis skills;
- Experience of working in a multidisciplinary research team and liaising with other universities;
- Good time management and planning skills, with the ability to meet tight deadlines and work effectively under pressure.
- A proven track record of delivering research objectives in an efficient time scale;
- A proven ability to manage competing demands effectively, responsibly and without close support;
- A proven track record of peer-reviewed publications in high impact factor journals and of producing high quality written reports, research articles and reviews;
- Excellent written and verbal communication skills including presentation skills;
- A strong commitment to your own continuous professional development.

You may also have:

- Experience of pursuing external funding to support research.

How to apply

You can apply for this role online; more guidance can be found on our How to Apply information page. Applications should be submitted by **23.59** (UK time) on the advertised closing date.






Contact information

To explore the post further or for any queries you may have, please contact:

Steven Milne, Professor of Materials Chemistry
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Email: S.J.Milne@leeds.ac.uk

Additional information

Faculty and School Information
Further information is available on the research and teaching activities of the Faculty of Engineering & Physical Sciences, and the School of Chemical and Process Engineering.

A diverse workforce
The Schools in the Faculty of Engineering & Physical Sciences are proud to have been awarded the Athena SWAN Bronze or Silver Award from the Equality Challenge Unit, the national body that promotes equality in the higher education sector. Our equality and inclusion webpage provides more information.

Working at Leeds
Find out more about the benefits of working at the University and what it is like to live and work in the Leeds area on our Working at Leeds information page.

Candidates with disabilities
Information for candidates with disabilities, impairments or health conditions, including requesting alternative formats, can be found on our Accessibility information page or by getting in touch with us at disclosure@leeds.ac.uk.

Criminal record information

Rehabilitation of Offenders Act 1974
A criminal record check is not required for this position. However, all applicants will be required to declare if they have any 'unspent' criminal offences, including those pending.



Any offer of appointment will be in accordance with our Criminal Records policy. You can find out more about required checks and declarations in our Criminal Records information page.




