UNIVERSITY OF LEEDS

CANDIDATE BRIEF

University Academic Fellows in The Bragg Centre for Materials Research
Faculty of Engineering

Salary: Grade 8 (£40,792 – £48,677 p.a.)

Reference: ENGBC1000

Closing date: 10 March 2019

We will consider flexible working arrangements

University Academic Fellows
The Bragg Centre for Materials Research, Faculty of Engineering

Are you an experienced and ambitious researcher looking for your next challenge? Do you have a strong research background in advanced materials? Do you want to further your career in a world-leading, research-intensive Russell Group University?

With a vision and drive to contribute to a world-leading research portfolio, as well as a passion for undertaking research-led teaching, you will make a significant impact on the performance, stature and profile of research and student education at the University of Leeds.

We are seeking up to three University Academic Fellows (UAFs) to be associated with the University's Bragg Centre for Materials Research ('the Bragg Centre'). The Bragg Centre is part of the £96M University investment in the new Sir Henry Bragg Building, which will also provide new accommodation for the Schools of Computing and of Physics & Astronomy, and will integrate our Engineering and Physical Sciences Schools. The vision of the Bragg Centre is to:

- Bring together the fundamental understanding, modelling, design and fabrication of materials with their exploitation in new devices, systems and applications, underpinning 21st century research challenges in disciplines across the physical sciences and engineering, and beyond this to the life sciences.
- Open up new ways of working, and further reduce any physical boundaries between key disciplines, through creation of internationally-leading, future-proofed, integrated suites of shared specialist experimental facilities, and through the physical co-location of the Engineering and Physical Sciences Schools in the broader Sir William Henry Bragg building.
- Foster a culture of inter-disciplinary collaborative research and enable new collaborations between world-leading researchers across campus to address some of humankind's greatest challenges.
- Align the Bragg Centre with Leeds leadership of external research activities such as those based on the SuperSTEM at Daresbury, the Diamond Light Source at Harwell, the ISIS neutron facility, and via the Henry Royce Institute, the UK's national centre for research and innovation in advanced materials, of which the University of Leeds is a founding partner.
- Create a vibrant PhD, postdoctoral and UAF interdisciplinary community, and attract and retain internationally-leading researchers, to work at the forefront of these interconnected fields.

- Nurture the academic and leadership potential of all Bragg Centre researchers, who will deliver our ambitious research priorities and aspirations including:
    - producing outputs of the highest academic quality;
    - attracting substantial public and private sector funding by consolidating existing, and forming new, national and international research collaborations;
    - catalysing rapid growth in the societal and economic impact of our research beyond academia both nationally and internationally;
    - integrating key industry partners.

The Centre's research is focussed around six broad themes, which align with critical mass research groupings and are supported by internationally-leading facilities:

- **Analytical Science**; We develop and exploit new and established analytical techniques in order to create and improve both new and existing materials via an understanding of morphology, structure and chemistry at the atomic scale. In addition to our expertise in nanomaterials, metals, ceramics, minerals and cementitious materials, we have developed capability in poorly crystalline materials, mixed inorganic/organic systems and pure organic systems, which have increasing application in the fine chemical, energy, biomedical, pharmaceutical and food engineering sectors.
- **Bionanotechnology;** Smart functional and responsive materials based on biologically-inspired principles present opportunities from biomedical applications to directed 3D nanostructure assembly. Our research includes: materials and approaches for stem cell therapies, and targeted and triggered drug delivery; biosensors for rapid diagnostics, for example to reduce anti-microbial resistance; membrane models; organ-on-a-chip systems; artificial cells; and advanced contrast and calibration agents in healthcare applications. We maintain a strong focus on the translation of research into patient benefit and collaborate extensively with the Leeds Teaching Hospitals NHS Trust.
- **Electronic and Photonic Materials**; We specialise in semiconducting, superconducting, magnetic, piezoelectric and glassy materials. A particular focus is the integration of different functional materials in a single device, allowing the engineering of hybrid mechanical, electronic, magnetic and optical properties. We pursue fundamental research into quantum coherence, spintronics, magnonics, skyrmions, and topological insulators, with challenge-led research including rare-earth mineral processing and new sensors for medicine and extreme environments. Our terahertz frequency lasers have application for medical and environmental sensing, as well as for the coherent control of matter.
- **Functional Surfaces**; Our expertise in tribology and surface engineering is used to understand the fundamental physics of material degradation mechanisms and at-surface processes that control friction, thin film formation

and wear, corrosion and the deposition of mineral scale, waxes and asphaltenes. We use techniques such as advanced *in situ* chemical analysis, non-equilibrium thermodynamics, simulation and sensing, friction prediction through understanding rheology/tribology interactions, and particle-particle friction. This enables us to develop new surface coatings for application across, for example, the automotive, energy and medical sectors.

- **Multiscale Materials**; Our work on multiscale materials involves the modelling and construction of high performance materials from the atomic- to the macro-scale. Topics include crystallisation, nanomaterial synthesis, supramolecular assembly, and nanocomposites. We aim to develop an understanding of the physico-chemical interactions in fabricating new materials with applications such as molecular devices, catalytic materials, drug therapies, membranes and batteries, nanotechnologies, sensors, and structural materials.
- **Soft Matter**; Soft matter materials include colloidal systems, surfactants, liquid crystals; polymers, gels and glasses. Our research includes: novel polymer batteries; auxetic liquid crystal elastomers; novel liquid crystal systems for higher resolution display and non-display applications; environmentally-sustainable cellulose-based systems as composites; improved processes for pharmaceutical and food manufacturing; and high-impact resistant polymer composites.

Successful candidates will pursue research that complements or aligns with one or more of these broad research themes of the Bragg Centre.

Career Pathway: Tenure track equivalent post requiring successful completion of a five-year development plan, leading to appointment to a grade 9 Associate Professor, with the potential for accelerated progression.

What does the role entail?

As a University Academic Fellow your main duties will include:

- Pursuing a programme of individual and collaborative research, resulting in high quality publications and a national and international profile and engaging with industry as appropriate to attract and co-ordinate major initiatives;
- Promoting the integration of your own research area with other research interests in the Bragg Centre and aligned Schools and Faculties across the University;
- Attracting research funding individually and collaboratively to underpin high quality research activity and research programmes/projects;
- Developing a strategy to ensure that your research has the potential for impact beyond academia;
- Undertaking research-led teaching at different levels, with engagement in continual improvement in response to student and other feedback;

- Contributing to the design, development and planning of teaching modules and policy within relevant subject areas as required;
- Working in partnership with students to provide outstanding education and an excellent student experience;
- Contributing to the management of the Bragg Centre and associated School(s) or cross-university interdisciplinary initiatives by taking on appropriate leadership, management and administrative responsibility;
- Leading academic initiatives and projects in research and student education which facilitate Bragg Centre, School, Faculty and/or University development;
- Participating in the recruitment, management and development of staff as well as acting as a mentor to less experienced colleagues;
- Contributing to the development of the discipline or research area, e.g. through organisation of conferences or membership of key bodies setting the strategic direction of the area;
- Contributing to the development and achievement of University, Faculty and School strategy within the context of an international, research-led university;
- Becoming a specialist in the field, developing and maintaining an external profile as appropriate to the discipline;
- Maintaining your own continuing professional development;
- Carrying out the duties of the post in accordance with University policies, procedures, values and standards, including the Leadership and Management standard.

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 University Academic Fellow you will have:

- A PhD (or equivalent qualification) in a relevant field;
- Significant expertise in materials research that complements or aligns with the broad research themes of the Bragg Centre;
- Evidence of the potential to secure significant external funding to support your research activity;
- A clear and compelling academic plan that will deliver academic and more general impact at an international level;
- A clear strategy to connect across the different research groups within the University;
- Significant proven research experience within the academic discipline with a developing record of internationally excellent publications;

- Experience of presenting at national and international conferences and/or symposia;
- Evidence of building strong working relationships within and, as appropriate, beyond your own discipline and to contribute to successful projects and collaborations;
- The potential and commitment to undertake high quality and innovative teaching and gain a higher education teaching qualification or award;
- Experience of delivering and engaging with student education where opportunities have existed;
- A high level of interpersonal and communication skills, and a strong ability to communicate effectively in writing and verbally with students, academic and external audiences;
- The ability to lead projects and organise, balance and prioritise work commitments.

You may also have:

- Experience of leading on projects and initiatives, including managing resources and conflicting priorities within challenging circumstances;
- A growing track record of successful and innovative teaching at both undergraduate and/or postgraduate level;
- Experience of involvement in postgraduate research supervision;
- Experience of working collaboratively with external partner organisations;
- Experience of mentoring in the workplace.

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

For any queries, please email: UAFSupport@leeds.ac.uk

To explore the post further, please contact:

Professor Giles Davies FREng, Pro-Dean for Research and Innovation (Faculty of Engineering), and Chair of the Bragg Centre for Materials Research Steering Group
Tel: +44 (0)113 343 2070 (PA: Mrs Susan Hobson)
Email: g.davies@leeds.ac.uk

Additional 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.