Post Description

Position	Research Fellow – Composites in the Hydrogen economy	Position no:	15178
College / Directorate / Institute	College of Engineering, Design and Physical Sciences Brunel Composites Centre (BCC)		
Grade	R1		
Contract type	Fixed term 24 months		
Full time/Part time	Full time		
Accountable to	Mihalis Kazilas		
Reports	N/A		
Internal stakeholders	BCC research team		
External stakeholders	Industrial collaborators of the Centre		
Date reviewed	June 2024		

Main accountabilities:

To contribute to the provision of high-quality research through;

- Developing high quality collaborative funded research in composites in the hydrogen economy
- Publishing in high impact academic journals and non-academic outlets
- Engaging with relevant stakeholders to generate research impact.

Key duties and responsibilities:

Brunel Composites Centre (BCC) has a portfolio of collaborative research projects covering research in physicochemical phenomena that take place at the interface of polymer matrix composite materials. Hydrogen economy will require a number of unique solutions for hydrogen transportation through pipes and storage through tanks. The use of composites in these applications will enable a safer operational envelope for the hydrogen economy as metallic solutions suffer from hydrogen stress cracking that can limit the life cycle of assets and increase the operational costs.

The objective of the post is to characterise thermoset and thermoplastic polymer matrices and composites in a number of environments and study diffusion, aging and permeation phenomena. Modelling of composites mechanical performance in a number of environments is linked to the above objective. The work involves delivery of projects, publishing peer review papers and providing novel ideas for future funding.

The work involves:

- Thermoset and thermoplastic polymers characterisation
    - Cure kinetics for thermosets
    - Chemorheology modelling
    - Glass transition temperature modelling
- Long-term exposure of polymers
    - Ageing
    - Permeation through composites

- Composite materials processing
    - Composite Lay-up

The candidate should also have:

- PhD in Engineering with an understanding of the physicochemical processes linked to ageing and permeation through polymer composites.
- Experience or understanding of using composites to generate, transport, and/or store hydrogen to support energy transition.

Post Profile

Post-holders will be expected to provide **guidance** to staff and students, **direct** the work of small research teams and have **direct** client/sponsor contact

- Production of independent original research
- Take initiative in the planning of research

Management of Staff and Students (Responsibilities and Accountability)

- Provide guidance to staff and students and to direct work of small research team including Research Assistants and Technicians

Brunel Values

Open

We are welcoming and believe in the power of diversity. We are transparent in our decisions and deliver on what we say.

Courageous

We seek and take on ambitious challenges. We are brave and committed to thinking differently. Nothing stops us from going after our goals.

Inventive

We are purposeful in an ever-changing world. Collaborating and innovating to reach our full potential and to change lives - and the world - for the better. We celebrate breakthroughs and strive for the best.

University Employment Policy:

1. Undertake any other reasonable duties as required and commensurate with the grade of post.

2. Adhere to and comply with the provisions of the Data Protection Act and the Health and Safety at Work Act in accordance with University policies.

3. Undertake all duties and responsibilities in compliance with the rules and regulations encompassing equal opportunities to help foster a diverse workforce.

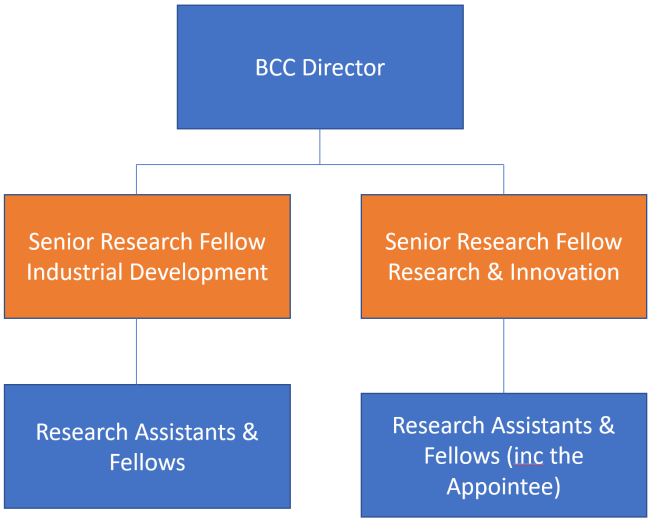
4. Adhere, comply and work in accordance with University and Departmental policies, procedures and codes of conduct.

5. Promote the University's Environmental Policy and demonstrate commitment to it through actions and decision making.

6. Actively participate in on-going professional development activities as requested.

Organisational Chart

The organisational chart comprises of the role, the manager of the role and any direct reports to the role.



Disabled applicants meeting the Essential criterion will be guaranteed an interview as part of the University's commitment to the Disability Confident Scheme.

Person Specification

Attributes	Criteria	Essential /Desirable	How measured
Education, qualifications & training	PhD in Engineering with understanding of the physicochemical processes linked to ageing and permeation through polymer composites.	E	Application form
	Evidence of research attainments including examples of written contributions in academic publications/journals.	E	
Experience	Evidence of IT literacy including Excel and Word.	E	Application form, Interview
	Proven experience of planning research and preparing research proposals.	D	
	Experience in working with thermal analysis equipment (DSC, DMA, rheometer, TMA)	D	
	Experience in polymer aging (testing and/or analysis/modelling)	D	
	Experience or understanding of using composites to generate, transport, and/or store hydrogen.	D	
	Experience of giving oral presentations at academic/non-academic conferences and meetings	E	
	Experience in multi-scale Modelling of Structure and Mass Transfer Relationships	E	
	Experience in composite damage modelling	E	
	Experience in technical delivery of research projects within time and budget	E	
Knowledge Skills & Abilities	Good communication skills both verbal and written – particularly when demonstrating the results of own research to both specialists and non-specialists.	E	Application form, Interview

	Ability to draft research papers for Publication in appropriate Academic Journals. Ability to work largely on own initiative with minimum supervision. Ability to work independently and as part of a team. Ability to work collaboratively with colleagues within the research centre and with external partners	D D E E	
Additional Requirements (not included above)	Evidence of research attainments including examples of written contributions in academic publications/journals. Provide evidence of independent, original research. Team-player and willing to work on different projects. Publication record in similar scientific/technological fields. Results-oriented approach, be self-driven with a positive outlook and a clear focus on high quality work.	D D E D D	

Job Hazard Assessment

Any identified hazards have undergone appropriate Risk Assessments.

Please tick all relevant workplace hazards identified with this post. Currently the University, as a minimum runs Health Surveillance programmes for staff working with skin and respiratory sensitisers, Biological Agents Class 2 and above and GMOs.			
Display screen ☒equipment	Manual handling ☐	Prolonged standing e.g. 1 hour plus ☐	Prolonged sitting e.g. 1 hour plus ☒
Biological agents: Class 2 and above and GMO Class 1 ☐	Human blood, tissue or fluids ☐	Respiratory sensitisers or laboratory allergens e.g. animals ☐	Skin Irritants/Chemicals ☐
Work in confined Places ☐	Ionising radiation ☐	Noise (more than 80 dba-8 hrs. taw) ☐	Lone working ☐
Use of dangerous machinery ☐	Electrical hazards ☐	Shift work/night work ☐	Work outdoors ☐
Neck & arm vibrating equipment ☐	Fork lift truck driving ☐	Work at heights ☐	Lasers ☐
Any other hazards (e.g. food handling) please specify and ensure that appropriate guidance has been received from the Health & Safety office:			

Physical demands of the job	Lifting ☐	Carrying ☐	Bending ☐	Pushing ☐
If lifting/carrying duties expected, please give details of heights/weight load(s) the individual is expected to lift/carry and frequency:				
Travel/Off-site working:	% of time		UK ☒	Overseas ☒
Driving for work:	None ☐	Occasionally ☒	Weekly ☐	Daily ☐

Management responsibility:	Supervisor ☐	Non-supervisory ☒
Hours of work:	Full time ☒	Part time ☐ hours
Non-standard contractual hours? (evenings/weekends) Night work Frequency, number of hours, type of work outside standard hours: Occasionally, only when travelling on business (project meetings), maximum 4 times/year		
Other – including occasional or possible work hazards (please specify nature and frequency):		