

Candidate Information

Position:	Research Fellow in Net Zero Concrete
School/Department:	School of Natural and Built Environment
Reference:	23/110818
Closing Date:	Monday 17 April 2023
Salary:	£36,333- £37,386 per annum.
Anticipated Interview Date:	Wednesday 26 April 2023
Duration:	Fixed Term for a period of 22 months to be completed 28/2/25

JOB PURPOSE:

We are seeking to engage a highly-motivated post-doctoral researcher for twenty months in the field of net zero concrete. The successful applicant will join the Intelligent and Sustainable Infrastructure Group at Queen's University Belfast, supporting activities in a funded research project being led by FP McCann, to explore the implications of a move towards net zero concrete. The appointed Research Fellow will work in a multidisciplinary team which includes researchers from industry and academia.

MAJOR DUTIES:

1. Design and optimisation of FR Concrete mixes (based on existing FPM semi-dry and wet-cast concretes) for required workability/strength and structural performance. Develop mix design of FRCs (based on fibre type and content) focused on workability and compressive strength.
2. Testing of fresh and hardened (density, volume of permeable voids) and structural properties (compressive strength development, flexural strength, modulus of elasticity, flexural toughness and residual resistance characteristics) of selected FRCs.
3. Structural design and FEA of FRC made and validation of FEA models using model-scale and full-scale FRC beams and slabs with SHM (testing at QUB and FP McCann).
4. Write high quality outputs for publication in top international journals in the field.
5. Support the supervision of PGR/Masters students within Civil Engineering.
6. Carry out undergraduate supervision/demonstrating/teaching duties under direction. Undertake routine administrative duties as requested, e.g. arranging research group meetings.
7. Critically evaluate academic papers, journals and textbooks to keep up to date with state of the art knowledge in the research area.
8. Attend relevant conferences, consortium meetings, seminars or training days as required for the post.
9. Carry out any other duties designated by a line manager and which fall under the general remit of the post.

ESSENTIAL CRITERIA:

1. Have, or are about to obtain, a PhD in, Civil/Structural Engineering.
2. Have obtained a first or upper second degree (or equivalent) in Civil/Structural Engineering or related discipline.
3. A minimum of three years relevant research experience in:
 - Concrete technology.
 - Use of sensors for SHM and post processing techniques e.g. computer vision .
 - Experience in NL FEA of concrete.
4. Demonstrate an ability to manage your own research and to plan research activities effectively.
5. Excellent verbal and written communication skills.
6. Demonstrate experience of communicating with, developing and maintaining academic and/or industrial relationships.
7. Commitment to continuous professional development.
8. Must be willing to work flexibility and travel to partner sites and testing sites as necessary.

DESIRABLE CRITERIA:

1. Experience of FRC.
2. Experience in structural testing.
3. Experience in programming in MATLAB®, or similar high level language.
4. Ability to meet mobility requirements of the post.