Candidate Information

Position:	Research Fellow
School/Department:	School of Chemistry and Chemical Engineering
Reference:	26/113244
Closing Date:	Sunday 12 April 2026
Salary:	£41,519 - £49,536 per annum
Anticipated Interview Date:	Friday 24 April 2026
Duration:	Available for 21 months or until 31 January 2028 whichever is soonest

JOB PURPOSE:

To lead the technical development, optimisation, validation, and field deployment of a smart optical nitrate sensor platform within the School of Chemistry and Chemical Engineering at Queen's University Belfast. The post holder will support the progression of the technology from TRL 4/5 to TRL 6/7 under the Invest NI Proof of Concept (PoC) Stage 2 programme, ensuring robust analytical validation, prototype refinement, and preparation for commercialisation via spin-out or licensing.

The role will combine advanced analytical chemistry, microfluidic systems development, and applied environmental testing with translational activity including prototype deployment, stakeholder engagement, and regulatory validation support. The post holder will work closely with the Academic Lead, Delivery Lead, QUBIS Commercialisation Manager, and external partners to de-risk the technology across technical and commercial dimensions.

MAJOR DUTIES:

1. Optimise and refine the functional polymer-based optical nitrate sensing chemistry to enhance selectivity, reproducibility, and robustness under real-world environmental conditions.
2. Lead laboratory validation studies, benchmarking performance against ion chromatography and other reference methods to meet defined analytical performance criteria.
3. Develop, test, and refine microfluidic chip formats (including reusable and/or biodegradable formats), ensuring performance stability and scalability.
4. Contribute to development and validation of smartphone-based RGB quantification workflows in collaboration with software developers, including experimental calibration and algorithm testing.
5. Design and execute accelerated ageing, stability, and environmental stress testing (pH, temperature, turbidity) to establish shelf-life and performance specifications.
6. Coordinate and conduct multi-site field trials with regulators, environmental agencies, and early adopters; collect structured performance and usability data.
7. Prepare standard operating procedures (SOPs), validation reports, Safety Data Sheets (SDS), and technical documentation to support regulatory engagement and commercial readiness.
8. Support IP development, including experimental evidence generation to strengthen patent claims and contribute to freedom-to-operate analysis.
9. Assist in prototype kit assembly, packaging optimisation, and deployment of early-stage evaluation units.
10. Contribute to commercialisation activities including demonstrations, exhibitions, stakeholder presentations, and preparation of technical material for investors or partners.

ESSENTIAL CRITERIA:

1. Have or about to obtain a PhD in Analytical Chemistry, Materials Chemistry, Environmental Chemistry, Chemical Engineering or a closely related discipline.

2. Recent relevant research experience to include

   · Demonstrable expertise in instrumental analytical techniques (e.g. ion chromatography, spectroscopy, or related methods).
   · Demonstrable familiarity with technology translation, commercialisation of research, or similar entrepreneurial activity.
   · Experience in method development, validation, and quantitative data analysis.
   · Experience working with complex sample matrices (e.g. environmental waters, agricultural runoff, wastewater).
   · Strong data handling and statistical analysis capability.
   · Publication record commensurate with stage of career.
3. Ability to contribute to broader management and administrative processes.
4. Contribute to the School's outreach programme by links with industry, community groups etc.
5. Willingness to undertake additional training in research methods and other related skills as required.
6. Ability to design and execute laboratory-based experimental programmes independently.
7. Ability to communicate complex information effectively in oral and written format.
8. Ability to build relationships to develop internal and external networks.
9. Ability to assess and organise resources.

DESIRABLE CRITERIA:

1. Experience in polymer chemistry, supramolecular chemistry, molecular recognition, or colourimetric sensing systems.
2. Experience in microfluidics, additive manufacturing (3D printing), or device prototyping.
3. Experience in smartphone-based analytical methods, image analysis, or algorithm-assisted quantification.
4. Experience supporting translation of research towards commercialisation, spin-out formation, or industry collaboration.

ADDITIONAL INFORMATION:

Informal enquiries may be directed to Professor Panagiotis Manesiotis: p.manesiotis@qub.ac.uk