Candidate Information

Position:	Research Fellow
School/Department:	School of Natural and Built Environment
Reference:	26/113183
Closing Date:	Monday 9 March 2026
Salary:	£41,519 - £49,536 per annum.
Anticipated Interview Date:	Tuesday 31 March 2026 - Wednesday 1 April 2026
Duration:	2 years

JOB PURPOSE:

As a part of the 14CHRONO team, the research fellow will lead a programme of research and development into novel thermally-driven evolved gas analysis (EGA) molecular separation approaches for radiocarbon application. They will independently manage and drive the exploration and validation of improved/enhanced methods for the isolation of reliable molecular compounds/fractions for the radiocarbon dating of highly challenging contaminated and mixed component substrates/materials. They will develop these approaches with a view to both archaeological and environmental applications, and as such contribute to both sustaining and enhancing 14CHRONO's position as a world-class radiocarbon dating research facility. This innovative work will be closely coupled to and feed into the recently established Institute for Heritage and Environmental Sciences, RICHeS facility, at QUB, providing and unlocking ground-breaking capabilities/techniques for the radiocarbon dating of heritage science artefacts. The fellow will draw upon their expertise to lead technical upgrades and testing of systems such as the ramped pyrolysis/combustion-IRMS, TG-MS, ATR-FTIR, and graphite lines in order to meet the programme goals/objectives. They will also advance internal and external research collaborations across a range of disciplines arising as a part of this work and be expected to develop and deliver high-quality research output and impact targets (e.g. high-quality publications, grant applications, impact and engagement exercises).

MAJOR DUTIES:

1. Develop and lead an innovative programme of research focused on the development of novel approaches to thermally-driven evolved gas analysis molecular separation, for the isolation of reliable compounds/fractions for the radiocarbon dating of archaeological materials, e.g. consolidated artefacts, and environmental samples, e.g. sediment, soil and peat samples.
2. Lead the technological development of equipment aligned with this program of research. This will include the ramped pyrolysis/combustion-IRMS, TGA-MS, ATR-FTIR and associated graphitization systems at 14CHRONO.
3. Development and validation of novel chemical and thermal pretreatment procedures for organic artefacts, including bone, wood and soil/sediment and the establishment of associated quality control procedures for future best practice. This includes investigation of potential supercritical fluid extraction (SFE) and adsorbent resin (e.g. XAD) approaches.
4. Proactively engage and develop networks and links with relevant collaborators consistent with the research project objectives but also with respect to the generation of future opportunities and avenues of research.
5. Liaise with, assist and train junior research staff, technicians, postgraduate students in the application of newly developed methods/approaches and operation/optimization of associated apparatus.
6. Trouble-shoot equipment problems with AMS unit manager.
7. In consultation with the 14CHRONO director and deputy director, promote research milestones and outputs at national and international conferences and through social media (where applicable).
8. Assist centre director and deputy director in strategic research and development planning. This includes assisting in the development of research grant proposals aligned with sustaining and developing upon the current program.
9. Monitor and maintain a safe working environment in accordance with Health and Safety procedures. Ensure general workshop/laboratory services tidiness.
10. Carry out any other duties which are appropriate to the post as may be reasonably requested by Laboratory Manager or Director.

11. Undertake supplementary duties relevant to the success of the project including administrative duties and additional training and development activities as required.

ESSENTIAL CRITERIA:

1. Have or be about to obtain a PhD in Archaeology, Material Sciences or related discipline.
2. Technical expertise in molecular separation and characterisation ap-proaches, particularly mass spec-trometric methods.
3. Proficient in chemical and elemental analysis, isotope geochemistry and/or mass spectrometric meth-ods.
4. Experienced in stable isotope appli-cation and analysis for radiocarbon dating.
5. Knowledge/practice with applica-tion of supercritical fluid extraction (SFE) methods.
6. Experience in the technical and methodological development of analytical and sample pretreat-ment/preparation approaches.
7. Proven ability to publish in nation-al/international journals (commen-surate with stage of career).
8. Experienced in the computational analysis of multivariate chromato-graphic and mass spectrometric da-tasets.
9. Working effectively as part of a re-search team.
10. Ability to manage research projects and meet methodological development milestones/targets.
11. Experience in developing inter-disciplinary collaborations.
12. Practical/technical problem solving skills, independence of thought and initiative.
13. Ability to assess and organize technical resources.
14. Ability to communicate complex information in English effectively in oral and written format.
15. Experience of presenting at international conferences (commensurate with career stage).
16. Commitment to continuous professional development.

DESIRABLE CRITERIA:

1. MSc/Degree/Diploma in geochemistry/analytical chemistry.
2. Application of molecular separation and characterization approaches to bone/collagen and organic fractions for radiocarbon dating.
3. Py GC-MS/LC-MS experience.
4. Familiarity with collagen purification processes.
5. Experience with XRF and/or XRD.
6. Knowledge of wider leading-edge ad-vancements and appli-cations in heritage sci-ence.
7. Experience of technical report writing and pub-lication of same.
8. Track-record of working with archival or herit-age materials and sam-pling for radiocarbon dating and materials analysis.
9. Training and supervision of laboratory technicians and students.
10. Familiarity with Bayesian modelling software for radiocarbon applications.
11. Experience with EA-AGE graphitization systems.
12. Experience working with external collaborators from academic, heritage and environmental science sectors.
13. Experience with sample handling and export procedures.
14. Demonstrates effective working within a system/workflow of sample analysis.
15. Experience of working with a range of archaeological material types.
16. Interested in archaeology and highly motivated by archaeological science and its applications.

ADDITIONAL INFORMATION:

Informal enquiries can be directed to: Michelle Thompson - M.M.Thompson@qub.ac.uk.