UNIVERSITY OF LEEDS

CANDIDATE BRIEF

Reference: CSRIS1382

Closing date: 4th March 2026

Fixed Term for 24 months to complete specific time limited work.

Location: Mone Bros Excavations Ltd., Albert Road, Morley, LS27 8RU and University of Leeds, LS2 9JT

Overview of the Role

Do you hold a PhD (or close to completion) or have equivalent experience in Civil, Materials, or Chemical Engineering, Chemistry or a related discipline? Do you have a strong background in developing sustainable materials? Are you interested in working in a multi-disciplinary role for one of Yorkshire's most innovative construction materials processing firms?

As a KTP Associate in Sustainable Cementitious Materials, you will lead the development of processing Filter Cake Clay—a by-product of aggregate washing—into a low-carbon Supplementary Cementitious Material (SCM). This broad role involves material characterisation, thermal activation and grinding of the filter cake material. This will be followed by optimising hydration kinetics in cement blends, and performance testing of concretes containing novel SCM. The role will also involve environmental assessments such of the SCM and resultanct concrete. Additionally, you will develop manufacturing protocols, compliance documentation, and knowledge transfer to integrate these innovations into the business. As a successful candidate, you will ideally possess an engineering background and expertise in sustainable materials, as this project combines advanced research with practical industrial application.

Mone Brothers Excavations Ltd is a leading Yorkshire-based company specialising in quarrying, aggregate recycling, and earthworks, and is committed to sustainability and circular economy principles. Working with Mone Brothers and the academics at the University of Leeds, through the Schools of Mechanical and Civil Engineering, on this KTP provides a brilliant opportunity to apply cutting-edge research in a real-world setting, driving innovation in sustainable construction practices, transforming a large volume of Filter Cake Clay waste generated in a wash plant to a high value product, and contributing to reducing the carbon footprint of concrete, aligning with global net-zero goals.

Main duties and responsibilities

- **Characterising Filter Cake Clay (FCC)** to determine its mineralogical and chemical composition for suitability as a Supplementary Cementitious Material (SCM) in blended cements using techniques including (but not limited to) laser diffractometry, X-ray fluorescence, X-ray diffraction, thermogravimetry, scanning or transmission electron microscopy, and spectroscopic techniques.



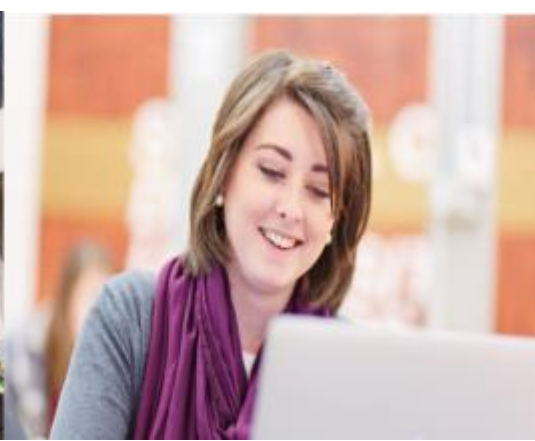
- **Develop and optimise thermal activation and grinding processes** (or a combination of these processes) to enhance FCC reactivity for use as SCMs in low-carbon concrete.
- **Determination of the mechanical strength** (e.g. compressive, flexural and tensile) **and transport properties** (e.g. porosity) of pastes/mortars/concretes
- **Design and conduct concrete mix trials** incorporating FCC-based SCM, assessing strength, durability performance, and dimensional stability of activated FCC-based concrete against industry standards.
- **Perform environmental and sustainability assessments**, including Life Cycle Analysis and preparation of Environmental Product Declarations (EPDs).
- **Create manufacturing protocols and compliance documentation** to support commercialisation and certification of FCC-based SCM.
- **Facilitate knowledge transfer within the company**, delivering training, workshops, and standard operating procedures to embed new processes.
- **Contribute to the dissemination of research results** by publication in leading peer-reviewed journals and by presentation at national and international meetings

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 are the benefits of being a KTP Associate?

- All KTP Associates spend 10% of their time on Personal Development; making full use of a £4,000 PD budget;
- Learning how the company works and its ongoing focus to become a key provider of circular economy solutions to sustainable construction products;
- Gaining knowledge and Experience of working within a thriving construction products company, with a strong commitment to sustainability;
- Access to two residential training sessions aimed at developing project management skills;
- Opportunity to gain both management and academic experience;
- Potential to fast-track a career in industry;
- Access to a wealth of academic resources;
- Access to a Travel & Subsistence and Consumables budget;
- Access to mentoring sessions through Innovate UK.





Qualifications and skills

Essential

- A doctoral degree (or close to completion) or equivalent experience in Materials, Chemical or Civil Engineering, Chemistry, or a closely allied discipline;
- A strong background in the chemistry and mineralogy of cementitious materials and/or clays, including experience using a range of techniques for the characterisation of Portland cements and/or alternative cementitious materials;
- Experience of determining fresh and hardened state properties of cements, mortars and/or concretes;
- Experience in concrete mix proportioning for special concretes (high strength, high performance and self-compacting concretes) and assessing hardened state properties of concretes, including (but not limited to) mechanical strength, transport properties (e.g. permeability and/or porosity), and deformation properties, including autogenous and drying shrinkage;
- Strong analytical and problem-solving skills with experience in **experimental design** and **data interpretation;**
- Effective communication skills, including **technical report writing** and presenting to diverse audiences;
- Ability to work collaboratively with **academic and industry stakeholders;**
- Interest in **sustainable innovation** and its practical applications in construction materials.

Desirable:

- Experience in applied research involving material development, testing, or waste reuse;
- Knowledge of Life Cycle Analysis (LCA) and environmental benchmarking methods;
- Understanding of industrial supply chains and regulatory frameworks in construction or manufacturing;
- Leadership potential and ability to translate research into commercial solutions.

To explore the post further or for any queries you may have, please contact:

ACADEMIC SUPERVISOR
Dr. Yuvaraj Dhandapani - Lecturer in Mineral Scaling
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COMPANY SUPERVISOR
Dr Denis Greene
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James Hartford - Innovation Support Officer (University of Leeds)
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Additional information

Find out more about the Faculty of Engineering and Physical Sciences

Find out more about our School of Mechanical Engineering

Find out more about our Research and associated facilities.

Find out more about ATHENA SWAN

Find out more about Mone Brothers

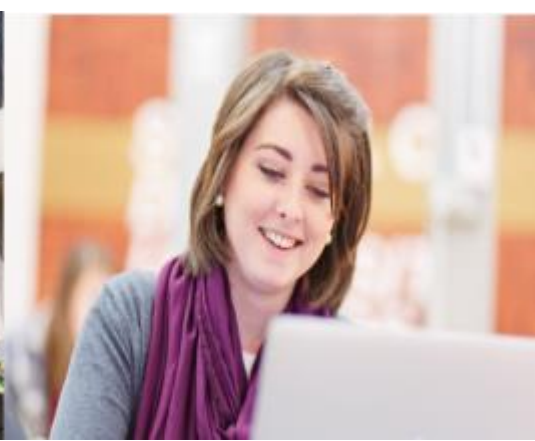
Find out more about Innovate UK

Interview location
Details will be provided should you be successful in gaining an interview.

Working as a KTP Associate at Leeds
You will be an employee of the University of Leeds and will have access to university facilities. However, you will be based at the company premises, working to their terms. You will have access to the University's USS pension scheme, with generous employer contributions.

A diverse workforce
The Faculty of Engineering and Physical Sciences has received a prestigious Athena SWAN Silver award from Advance HE, the national body that promotes equality in the higher education sector. This award represents the combined efforts of all schools in the faculty and shows the positive actions we have taken to ensure that our policies, processes and ethos all promote an equal and inclusive environment for work and study.





Working at Leeds
We are a campus-based community and regular interaction with campus is an expectation of all roles in line with academic and service needs and the requirements of the role. We are also open to discussing flexible working arrangements. To find out more about the benefits of working at the University and what it is like to live and work in the Leeds area visit our Working at Leeds information page.

Our University
As an international research-intensive university, we welcome students and staff from all walks of life. We foster an inclusive environment where all can flourish and prosper, and we are proud of our strong commitment to student education. Within the Faculty/School of School of Mechanical Engineering, Faculty of Engineering and Physical Sciences we are dedicated to diversifying our community and we welcome the unique contributions that individuals can bring, and particularly encourage applications from, but not limited to Black, Asian, those who belong to a minority ethnic community; people who identify as LGBT+; and disabled people. Candidates will always be selected based on merit and ability.

Information for disabled candidates
Information for disabled candidates, impairments or health conditions, including requesting alternative formats, can be found on our Accessibility information page or by getting in touch with us at hr@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.

Visa Entitlement:

Please note that this post may be suitable for sponsorship under the Skilled Worker visa route, but first-time applicants might need to qualify for salary concessions. For more information please visit: www.gov.uk/skilled-worker-visa.



For research and academic posts, we will consider eligibility under the Global Talent visa. For more information please visit: https://www.gov.uk/global-talent