

## Job Description

<b>Job title:</b>	<b>KTP Associate in Low Carbon Cement Technologies</b>
<b>Department/School:</b>	<b>Department of Architecture and Civil Engineering</b>
<b>Salary:</b>	<b>£40,000 - £48,000 p/a depending on qualifications and experience, plus an additional £2,332.00 personal training and development budget</b>
<b>Location:</b>	<b>This role will be based at Sika Ltd premises in Welwyn Garden City, Hertfordshire. This role is office / lab based 5 days a week.</b>
<b>Job purpose</b>	
<p>To develop additives to enable the replacement of up to 80% of Portland cement in concrete with supplementary cementitious materials.</p> <p>This project will support decarbonisation of the UK concrete sector by developing novel chemical admixtures for novel, low-carbon concretes using ultra-high levels of GGBFS. These products will meet the stringent technical and regulatory requirements of the construction industry. These activities will be complemented by knowledge transfer from all participants.</p> <p>To lead and deliver an innovative project, embedding new knowledge in both the Business Partner and the University.</p> <p>This is a 14-month Knowledge Transfer Partnership (KTP) between Sika UK Ltd and the Department of Architecture and Civil Engineering at the University of Bath.</p>	
<b>Source and nature of management provided</b>	
<p>The KTP project is delivered by the KTP Associate and is managed through a Local Management Committee (LMC). This is chaired by the senior company executive and comprises the Company and Academic leaders/supervisors and a KT Adviser (an Innovate UK representative) and meets every 4 months.</p> <p>Monthly progress meetings are held with the Company and Academic Supervisors.</p> <p>Day-to-day management will be organised by the Company's Supervisor and supported by the Academic supervisors.</p>	
<b>Special conditions</b>	
<p>The Associate must be able to travel as required, to attend 2 KTP residential schools and any meeting in the UK or overseas as this is necessary for the successful completion of the project.</p> <p>The Associate must be able to relocate to where the Company is located and be able to meet all visa application costs, if applicable.</p>	
<b>Main duties and responsibilities</b>	
<b>1</b>	Undertaking a full literature review including standards, journal papers, patents, reports, internet and other publications to establish the state of art of current slag-rich cement technologies (e.g.

	CEM III B/C, alkali-activated slag cements, supersulfated cements, hybrid alkaline cements)
2	Characterisation of powdered raw materials such as (but not limited to) cements and blast furnace slags from different sources using laser diffractometry, X-ray fluorescence and other characterisation techniques.
3	Production of paste, mortar or concrete specimens based on slag-rich cements.
4	Determining the effect of material mix designs and addition of selected chemical admixtures on the kinetics of reaction, workability and microstructure of these materials.
5	Acquisition and interpretation of data using the majority of the following analytical techniques: calorimetry, X-ray diffraction, thermogravimetry, scanning electron microscopy, spectroscopic techniques (e.g. Fourier transform infrared and/or solid-state NMR).
6	Mechanical strength testing of pastes, mortars or concretes including (but not limited to) compressive, flexural and tensile strengths.
7	Developing research objectives and contributing to setting the direction of the research activities in collaboration between Sika Ltd and the University of Bath.
8	<b>Teamwork and motivation.</b> It will be necessary to work both independently and effectively as part of a team at the company and to liaise with the knowledge base at Bath.
9	<b>Initiative and problem-solving.</b> The main objectives of the project and the desired timeline are set but how they will be achieved will be dictated by the evolution of the research. The Associate must therefore be self-motivated to complete the tasks and manage the project accordingly.
10	<b>Liaison and Networking.</b> The project relies on a good dissemination of results but also the proactive search for the right information, sometimes outside the applicant's direct skill set, and sometimes to show external customers the results of the project and how it matches their objectives. Timely and relevant exchanges of information are primordial.
11	<b>Communication.</b> The KTP Associate is expected to communicate and present research results in an organised manner. The Associate is expected to prepare and write monthly progress reports, executive summaries and other reports for the Local Management Committee (LMC) meetings. Within the limits of commercial confidentiality, the Associate will have the opportunity to deliver papers at conferences and will be expected to co-author articles in peer-reviewed international publications. Excellent written and oral communication skills are therefore important.
12	<b>Supervision.</b> There is no direct management responsibility. However, at specific times in the project, the Associate might be expected to supervise technical staff for completion of specific tasks, either in person or remotely, if justified by the project's operational requirements.
13	The Associate must be aware of and abide by all relevant University / Business Partner / KTP regulations and guidance relevant to their role and follow all the University and the Business Partner's policies and working practices and procedures at all times to ensure that no disclosure of confidential information results from their actions.
The Associate from time to time will be required to undertake other duties of a similar nature as reasonably required by the supervisors.	

### Person Specification

Criteria	Essential	Desirable
<b>Qualifications</b>		
A doctoral degree (or close to completion) in Materials, Chemical or Civil Engineering, Chemistry or a closely allied discipline; or equivalent significant relevant experience and professional qualification.	√	
<b>Experience/Knowledge</b>		
A strong background in the chemistry of slag-based cement materials, such as binary or ternary slag Portland cements, alkali-activated cements, super-sulfated cements, and/or hybrid alkali-activated cements;	√	
Experience in determining fresh state properties of cements, mortars and/or concretes, including (but not limited to) kinetics of reaction, setting time, rheology and/or workability;	√	
Experience in determining hardened state properties of cement, mortars and/or concretes including (but not limited to) mechanical strength, and transport properties (e.g. permeability and/or porosity);	√	
Experience in using and analysing results from a range of techniques for materials characterisation applied to cements, including at least the majority of: X-ray diffraction, scanning electron microscopy, thermogravimetry, spectroscopic techniques (e.g. Fourier transform infrared and/or solid-state NMR);	√	
Experience of working in multi-disciplinary project teams to agreed project plans and specifications;		√
Project management experience or demonstrated self-motivation in industry and/or research settings;		√
Experience in market and commercialisation analysis.		√
<b>Skills</b>		
Good time management and planning skills, with the ability to meet tight deadlines and work effectively under pressure;	√	
Proven ability to manage competing demands effectively, responsibly and without close support;	√	
A proven ability to work well both individually and in a team;	√	
Ability to organise and prioritise own workload to meet required deadlines;	√	
Ability to write research reports and to effectively disseminate outcomes;	√	
Excellent written and verbal communication skills (proven experience of writing reports, presenting research outputs, interacting with customers or other third parties communicating complex technical information to	√	

stakeholders at all levels);		
Demonstrated high-level investigation, analysis and research skills;	√	
Ability to conceptualise and understand the commercial imperative for the project;	√	
Excellent problem-solving skills.	√	
<b>Attributes</b>		
Self-motivated: ability to “take ownership” of the project and bring it to successful completion;	√	
Awareness of the principles of KTP and a willingness to embrace them;	√	
A strong commitment to your own continuous professional development;	√	
Be a team-player, supportive of colleagues and always operating in a collegiate manner;	√	
Active membership to national or international scientific networks such as ICT, ICE, RILEM, ACI, fib, or others.		√