

## PHD SCHOLARSHIP OPPORTUNITY “Polymer Concrete for Timber Composites”

### Project abstract

Timber-concrete composite (TCC) is made by connecting a concrete topping with timber joists or beams to selectively utilise advantages of their structural properties. The performance of these composite systems is complicated because the long-term behaviour of timber, concrete and the connection, which are affected by creep and shrinkage/swelling, is different. The recent advancements in concrete modification by polymers indicate that superabsorbent polymers (SAP) can potentially address the issue of concrete shrinkage. The main purpose of this research is to explore the effectiveness and sustainability of improved TCC used for construction through the introduction of SAP. To maximise the environmental ‘friendliness’ of the novel TCC system, the concrete used will utilise ground-granulated blast-furnace slag (GGBS), partly substituting energy consuming cement and reducing the amount of GGBS for disposal. This project will expand existing knowledge on TCC technology and establish an advanced practical solution that can enhance the TCC system in terms of structural and durability performance.

### Requirements

Applicants must have a first class or upper second class honours degree, or a master’s degree (or equivalent qualification), in Civil Engineering or related area. The ideal candidate will have some knowledge of concrete technology and timber engineering, and testing techniques. The successful candidate should be highly self-motivated and be prepared for laboratory work with modern testing equipment. Evidence of good spoken and written English is essential. The candidate should have an IELTS score of 6.5 or above, or an equivalent qualification, if the first language is not English. This position is open to all qualified candidates irrespective of nationality.

### Award

The student will be awarded a PhD degree from the University of Liverpool (UK) upon successful completion of the program. The PhD Scholarship is funded by Xi’an Jiaotong-Liverpool University under RDF scheme. The student will be based at the EB Building at the Department of Civil Engineering, XJTLU, Suzhou, China and will be working on the research project under the supervision of Dr. Karol Sikora (principal supervisor), and co-supervised by Dr. CS Chin (XJTLU), Dr. Jun Xia (XJTLU) and Dr. Zhongwei Guan (University of Liverpool). The scholarship holder is expected to carry out the major part of his or her research at XJTLU in Suzhou, China. However, he or she is eligible for a research study visit to the University of Liverpool of up to three months, if this is required by the project.

The duration of the project is 3 years and PhD needs to be completed within this time. A full PhD scholarship consists of a tuition fee waiver for 3 years (RMB 240,000 total value) and a monthly stipend of RMB 3,500 for 3 years (RMB 126,000 total value). It also provides up to RMB 16,500 to allow participation at international conferences during the period of the award. The payment of monthly stipend is conditional upon the student undertaking a teaching assistant (TA) role up to 500 hours/year and making satisfactory progress in research.

### Application Procedure

Submit via e-mail to Dr. Karol Sikora ([Karol.Sikora@xjtlu.edu.cn](mailto:Karol.Sikora@xjtlu.edu.cn)) the following documents and copy to [doctoralstudies@xjtlu.edu.cn](mailto:doctoralstudies@xjtlu.edu.cn) (please put the project title in the subject line):

- CV
- Two reference letters
- Personal statement outlining your interest in the position
- Proof of English language proficiency (an IELTS score of above 6.5 or equivalent is required)
- Verified school transcripts in both Chinese and English (for international students, only the English version is required)
- Verified certificates of education qualifications in both Chinese and English (for international students, only the English version is required)