

## PhD studentship (Full-time)



Institution	Xi'an Jiaotong-Liverpool University, China
Department	Department of EEE
Supervisors	Principle supervisor: <b>Dr. Huiqing Wen</b> (Xi'an Jiaotong-Liverpool University) Co-supervisor: <b>Dr. Lin Jiang</b> (University of Liverpool, UK); <b>Prof. Cezhou Zhao</b> (Xi'an Jiaotong-Liverpool University); <b>Dr. Yihua Hu</b> (University of Liverpool, UK);
Application Deadline	Open until the position is filled
Funding Availability	Funded PhD project (world-wide students)
Project Title	Modelling and Failure Mode Analysis of Power Electronics Devices 电力电子器件建模及失效模式分析
Contact	Please email <a href="mailto:Huiqing.Wen@xjtlu.edu.cn">Huiqing.Wen@xjtlu.edu.cn</a> (principal supervisor's email address) and copy <a href="mailto:doctoralstudies@xjtlu.edu.cn">doctoralstudies@xjtlu.edu.cn</a> with a subject line of the PhD project title

### **Requirements:**

The candidate should have a first class or upper second class honours degree, or a master's degree (or equivalent qualification), in **power electronics and renewable energy**. 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.

### **Degree:**

The student will be awarded a PhD degree from the University of Liverpool (UK) upon successful completion of the program.

### **Funding:**

The PhD studentship is available for three years subject to satisfactory progress by the student. The award covers tuition fees for three years (currently equivalent to RMB 80,000 per annum) and provides a monthly stipend of 3500 RMB as a contribution to living expenses. It also provides up to RMB 16,500 to allow participation at international conferences during the period of the award. It is a condition of the award that holders of XJTLU PhD scholarships carry out 300-500 hours of teaching assistance work per year. 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.

### **Project Description:**

Power electronics devices such as IGBTs and Power MOSFETs are playing the essential role in the electrical power system with the fast development of renewable energy. The development of an accurate simulation model of power electronics devices based on their switching characteristics becomes one of hot and challenging task. Since the failure of devices will result in the malfunction of the whole power system, investigation of various failure patterns of devices for different applications will improve the lifetime of devices and system reliability. In this project, originated from the structure, operating principle and switching characteristics of IGBTs, two kinds of basic modeling methods including behavioral modeling and physical modeling are investigated and compared. Besides, main failure patterns of IGBTs such as gate failure, over-current failure during switching transients and on-state, over-voltage failure have been analyzed from different levels such as the chip level, package process, module and system level.

For more information about doctoral scholarship and PhD programme at Xi'an Jiaotong-Liverpool University (XJTLU): Please visit

<http://www.xjtlu.edu.cn/en/admissions/phd/entry-requirements.html>

<http://www.xjtlu.edu.cn/en/admissions/phd/feescholarships.html>

### **How to Apply:**

Interested applicants are advised to email Huiqing.Wen@xjtlu.edu.cn (principal supervisor's email address) the following documents and copy [doctoralstudies@xjtlu.edu.cn](mailto:doctoralstudies@xjtlu.edu.cn) (please put the project title in the subject line).

- CV
- Two reference letters with company/university letterhead
- 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)

**Informal enquiries** may be addressed to Dr. Huiqing Wen (Huiqing.Wen@xjtlu.edu.cn), whose personal profile is linked below,

<http://www.xjtlu.edu.cn/zh/departments/academic-departments/electrical-and-electronic-engineering/staff/huiqing-wen>