

PhD studentship (Full-time)

Institution	Xi'an Jiaotong-Liverpool University, China
School	School of Mathematics and Physics
Supervisors	Principal supervisor: Professor/Dr Bo Liu (XJTLU) Co-supervisor: Professor/Dr. Hao Yu (XJTLU) Co-supervisor: Professor/Dr Maher, Simon (UoL)
Application Deadline	Open until the position is filled
Funding Availability	Funded PhD project (world-wide students)
Project Title	Study on Portable MEMS-based Gas Sensor Arrays for Diagnosing and Monitoring Chronic Kidney Disease Using Exhaled Gas Analysis
Contact	Please email bo.liu@xjtlu.edu.cn with a subject line of the PhD project title. The principal supervisor's profile is linked here: https://scholar.xjtlu.edu.cn/en/persons/BoLiu

Requirements:

A Master's degree with Merit and a Bachelor's degree with first-class or upper second-class honors are required for PhD admissions. Exceptional candidates holding only a Bachelor's degree may be considered on an individual basis in certain disciplines.

Evidence of good spoken and written English is essential. The candidate should have an IELTS (or equivalent) score of 6.5 or above, 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 99,000 per annum). It also provides up to RMB 16,500 to allow participation at international conferences during the period of the award. The scholarship holders are expected to conduct the majority of their research at XJTLU in Suzhou, China. However, they may apply for a short-term research visit to the University of Liverpool if the project requires it.

Project Description:

1. Abstract

Chronic Kidney Disease (CKD) is a major public health concern in China, affecting an estimated 132.3 million people, the highest global prevalence. Hypertension and diabetes are the main causes of CKD, necessitating individualized treatments. Early-stage CKD is asymptomatic and difficult to distinguish during clinical test. The traditional methods like blood and urine tests are invasive, expensive, and require frequent hospital visits, burdening patients. Biomarkers are crucial diagnostic tools that are strongly associated with a variety of diseases. For example, ammonia is a biomarker for CKD, nitric oxide (NO) for asthma and acetone for diabetes. A MEMS based handheld prototype will be tested and the standard for diagnosing the CKD status will be achieved by the big data analysis.

2. Research objectives

1. To establish the pivotal role of NH_3 in the diagnosis of chronic kidney disease (CKD), particularly within clinical settings, while also investigating the feasibility and potential of NO and acetone as biomarkers for diagnosing CKD driven by different etiologies.

2. To develop a portable gas sensor array that detects ammonia, NO, and acetone, enabling both the etiological diagnosis and ongoing monitoring of CKD.

3. To gather clinical data through practical implementation, build a comprehensive data system, and integrate artificial intelligence and big data analytics to create a robust diagnostic model and precise predictive tool. This approach will facilitate early screening and personalized risk assessment for CKD, thereby advancing the clinical relevance of the technology.

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

<https://www.xjtlu.edu.cn/en/admissions/global/entry-requirements/>

<https://www.xjtlu.edu.cn/en/admissions/global/fees-and-scholarship>

How to Apply:

Interested applicants are advised to email.....@xjtlu.edu.cn (XJTLU principal supervisor's email address) the following documents for initial review and assessment (please put the project title in the subject line).

- CV
- Two formal reference letters
- Personal statement outlining your interest in the position
- Certificates of English language qualifications (IELTS or equivalent)
- Full academic 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)
- PDF copy of Master Degree dissertation (or an equivalent writing sample) and examiners reports available