

### PhD studentship (Full-time)

Institution	Xi'an Jiaotong-Liverpool University, China
School	School of Advanced Technology
Supervisors	Principal supervisor: Dr Min Chen (XJTLU) Co-supervisor: Professor Rong Hu (JITRI) Co-supervisor: Professor Maulik Patel (UoL)
Application Deadline	Open until the position is filled
Funding Availability	Funded PhD project
Project Title	The hydrogen embrittlement mechanism of Aluminum Alloys
Contact	Please email <a href="mailto:Min.Chen@xjtlu.edu.cn">Min.Chen@xjtlu.edu.cn</a> (XJTLU principal supervisor's email address) or <a href="mailto:rong.hu@njtech.edu.cn">rong.hu@njtech.edu.cn</a> (JITRI supervisor's email) 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 material science or a closely related field.

Evidence of good spoken and written English is essential. The candidate should have an IELTS score of 6.5 or above, if the first language is not English. This position is open to all qualified candidates irrespective of nationality.

**Please note that the joint PhD project is industry-based and the candidate is expected to undertake part of the research at the partner organization in China.**

#### **Degree:**

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

#### **Funding:**

This PhD project is a collaborative research project between XJTLU (<http://www.xjtlu.edu.cn>) in Suzhou and JITRI (Jiangsu Industrial Technology Research Institute) Yangtze Delta Region Institute of Advanced Materials. The student will be registered as an XJTLU PhD student but is expected to carry out the

major part of his or her research at Yangtze Delta Region Institute of Advanced Materials.

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). In addition, during the period of undertaking main research at institute in Suzhou, the PhD candidate will be provided with monthly living allowance at a standard RMB 5000 per month by Yangtze Delta Region Institute of Advanced Materials.

### **Project Description:**

Al alloys are considered as important structural materials due to their light-weight and high performance in mechanical properties. However, the safe application of these Al alloys is often threatened by environmental hydrogen embrittlement under different loading conditions. Despite various mechanisms been proposed, the HE mechanisms of Al alloys are still not fully understood. With the state-of-art atom probe tomography equipped with vacuum-cryo transfer module, this project aims to clarify the distribution of hydrogen among Al alloys and how the interactions of hydrogen with microstructural features affect the hydrogen susceptibility of these alloys. A deeper understanding of HE mechanism can be achieved. These knowledges will further provide a strong basis for the design of the advanced Al alloys with improved HE resistance properties.

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

<http://www.xjtlu.edu.cn/en/study-with-us/admissions/entry-requirements>

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

### **Supervisor Profile:**

#### **Principal Supervisor:**

Dr. Min Chen, senior associate professor from School of Advanced Technology, Xi'an Jiaotong-Liverpool University. Dr. Chen received her bachelor and doctor degree in Mechanical Engineering from Southeast University. From 2007 to 2015, she studied and worked in RWTH Aachen, Germany.

Her research focuses on the structure optimization, reliability analysis,

computational mechanics and product design. Currently she hosts several governmental research funding and industrial projects related to smart structure and multi-physics coupling analysis.

<https://www.xjtlu.edu.cn/en/departments/academic-departments/school-of-advanced-technology/staff/min-chen>

**JITRI co-supervisor:**

Professor Rong Hu works full time in Nanjing Tech University, and as research consultant in Characterization Center of Yangtze Delta Region Institute of Advanced Materials. She was a Humboldt Research Fellow, and one of the “Dual Initiative Dorctors” of Jiangsu Provinces. Her doctoral supervisor was the Fellow of the Royal Society, one of the founders of the Atom Probe Tomography (APT), Professor George D.W. Smith in the University of Oxford. Her research interests focus on the development and application of APT, and she carries out many original studies on the characterization of microstructure evolution in nuclear materials and semiconductors. She hosted two youth projects funded by National Natural Science Foundation of China and Natural Science Foundation of Jiangsu Province separately, and participating in one National Key R&D research project. She has published more than 20 peer reviewed papers on Progress in Materials Science, Science Advances, Acta Materialia and other top journals.

<http://lm.njtech.edu.cn/info/1070/2484.htm>

**UoL co-supervisor:**

Dr Maulik Patel, Reader in Nuclear Materials Science, University of Liverpool. His research interest lies in materials for nuclear, renewable energy and advanced manufacturing. Dr. Patel use various types of radiation to understand the influence of atomic level defects on material performance.

<https://www.liverpool.ac.uk/engineering/staff/maulik-patel/>

**How to Apply:**

Interested applicants are advised to email [Min.Chen@xjtlu.edu.cn](mailto:Min.Chen@xjtlu.edu.cn) (XJTLU principal supervisor's email address) or [rong.hu@njtech.edu.cn](mailto:rong.hu@njtech.edu.cn) (JITRI supervisor's email) the following documents for initial review and assessment (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 6.5 or above)
- 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)
- PDF copy of Master Degree dissertation (or an equivalent writing sample) and examiners reports available