

## PhD studentship (Full-time)



Institution	Xi'an Jiaotong-Liverpool University, China
School	School of Science
Supervisors	Principal supervisor: Prof/Dr Chen Xuan (XJTLU, maths) Co-supervisor: Prof/Dr M.B.N. Kouwenhoven (XJTLU, physics) Co-supervisor: Prof/Dr Charles Loo (XJTLU, engineering) Co-supervisor: Prof/Dr Paolo Paoletti (UoL, engineering)
Application Deadline	Open until the position is filled
Funding Availability	Funded (world-wide students)
Project Title	<b>heterogeneous photo electrically responsive liquid crystal polymers and their smart actuators/robots</b>
Contact	Please email <a href="mailto:chen.xuan@liverpool.ac.uk">chen.xuan@liverpool.ac.uk</a> (XJTLU principal supervisor's email address)

### **Requirements:**

1. The candidate should have a 1st class or upper 2nd class honours bachelor's degree, or a master's degree (or equivalent qualification), in mechanics, physics, optics, maths, engineering, materials etc.
2. Experience in computational mechanics/physics/maths (with ANSYS/ABAQUS/COMSOL etc).
3. 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.

### **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). It also provides up to RMB 16,500 to allow participation at international conferences during the period of the award. 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 up to six months, if this is required by the project.

### **Project Description:**

Successful completion of this PhD programme could lead to worldwide career opportunities in academia and high-tech industrial sectors like software, R&D, biomed, robotics and smart manufacturing alike. The PhD project is on mathematical modeling and computer simulation of stimuli responsive smart materials. Macroscopic mechanical

response could originate from changes in microscopic configurations in such smart materials as liquid crystals and gels driven by thermal, optical, electrical and photochemical excitations. Soft biomimetic robots made of such smart materials capable of walking or swimming like animals in nature could be designed via simulation, together with experiments done by external collaborators. Smart remote control of such stimuli driven soft robots has promising engineering applications, the mechanical side of artificial intelligence. The primary role of the PhD candidate is to develop theoretical and numerical models to study the mechanics of smart materials and structures. The supervisors will endeavor to help the candidate work on simplified models to initiate the project. The candidate is welcome to propose additional ideas to the project.

For an overview of the field see:

Science Robotics: <https://robotics.sciencemag.org/content/4/33/eaax7112>

JMPS: <https://www.sciencedirect.com/science/article/abs/pii/S0022509618306045>

JMPS: <https://www.sciencedirect.com/science/article/abs/pii/S0022509618308226>

Proc. Roy. Soc. A: <https://royalsocietypublishing.org/doi/10.1098/rspa.2013.0535>

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>

**Informal enquiries** addressed to Prof/Dr. Chen Xuan ([chen.xuan@liverpool.ac.uk](mailto:chen.xuan@liverpool.ac.uk)), whose personal profile is linked below,

<http://www.xjtlu.edu.cn/en/faculty/chen.xuan>

Applicants are advised to email their CV and computational mechanics projects in the first instance. Shortlisted applicants will be interviewed.

### **How to Apply:**

Interested applicants are advised to email [chen.xuan@liverpool.ac.uk](mailto:chen.xuan@liverpool.ac.uk) (XJTLU principal supervisor's email address) the following documents.

- computational mechanics projects
- 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