

XJTLU-XJTU-UoL Joint Doctoral Supervision Project (Full-time)

Reference No.	SFXJTU2620
XJTLU School	Academy of Life and Natural Sciences
PhD Programme	Chemistry
Supervisors	XJTLU supervisor: Dr Wanxin Li XJTLU co-supervisor: Professor Zheng Chen XJTU supervisor: Professor Jie Han UoL supervisor: Dr Haifei Zhang
Project Title	The Regulatory Effect of Emerging Organic Contaminants on Microplastic Aging: Mechanisms and Consequences for Pollutant Vectoring 新兴有机污染物对微塑料老化的调控效应：作用机制及其对污染物载体行为的影响
Application Deadline	Open until the position is filled

Requirements:

A UK first-class or upper second-class honours Bachelor's degree and a UK Master's degree with Merit (or their equivalent) are required for PhD admissions. Exceptional candidates holding only a Bachelor's degree may be considered on an individual basis.

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.

For more information about entry requirements and admission procedures of PhD programme at XJTLU, please visit:

[Entry Requirement - Xi'an Jiaotong-Liverpool University](#)

[How to Apply - Xi'an Jiaotong-Liverpool University](#)

Other Requirements (if any):

Applicants with backgrounds in environmental science/engineering, chemistry, materials science, or related fields are preferred. Experience with microplastics, photochemistry, polymer characterization, adsorption modelling, EPR, chromatography/mass spectrometry, or high-resolution MS is advantageous. Strong experimental, quantitative, and English academic writing skills are desirable.

Programme Structure and Fees:

Doctoral students in the joint programme are registered with both XJTLU and the UoL. Upon successful completion of the programme, the students will be awarded a PhD degree from University of Liverpool. During their doctoral studies at XJTLU, students are expected to conduct research at XJTU as visiting students. Additionally, students have the opportunity to apply for a short-term research visit to the UoL if the project requires it.

The joint doctoral programme is offered on a full-time basis, with a typical duration of three to four years. The tuition fee is RMB 99,000 per year.

Project Description:

To cultivate research talents with global leadership, interdisciplinary innovation capabilities, and international research collaboration capabilities, Xi'an Jiaotong-Liverpool University (XJTLU) fully leverages its characteristics of international education and builds upon the long-established strategic cooperation among XJTLU, Xi'an Jiaotong University (XJTU), and the University of Liverpool (UoL). This initiative integrates top-tier research resources to launch a Joint Doctoral Supervision Programme across the three institutions.

Microplastics and emerging organic contaminants (EOCs) frequently co-exist in aquatic environments. While extensive research has examined passive adsorption of EOCs onto MPs, the possibility that co-existing EOCs actively regulate the physicochemical aging of MPs remains much less understood. This project will investigate how EOCs modify photo-oxidation pathways of MPs and how such contaminant-regulated aging subsequently reshapes their pollutant-vectoring capacity.

Polyethylene and polyethylene terephthalate will be used as structurally distinct model polymers, with representative EOCs such as tetrabromobisphenol A and bisphenol A serving as contrasting photochemical regulators. Controlled solar photo-aging will be combined with SEM, ATR-FTIR, XRD, fluorescence spectroscopy and high-resolution mass spectrometry to track morphological, chemical and molecular changes. Electron paramagnetic resonance and selective scavenging will resolve reactive oxygen species at the MP-water interface, while adsorption kinetics, isotherms and thermodynamic analysis will quantify how altered aging histories affect subsequent pollutant uptake. The project aims to establish a mechanistic framework linking contaminant-driven photochemistry, polymer aging and secondary vectoring, thereby improving long-term environmental risk assessment of complex microplastic pollution.

Joint Supervisory Team:

XJTU supervisor: Dr Wanxin Li

XJTU co-supervisor: Professor Zheng Chen

XJTU supervisor: Professor Jie Han

UoL supervisor: Dr Haifei Zhang

How to Apply:

Interested applicants are advised to email Wanxin.Li02@xjtlu.edu.cn or jiehan@xjtu.edu.cn the following documents for initial review and assessment (Please include 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