

PhD studentship (Full-time)

Institution	Xi'an Jiaotong-Liverpool University, China
School	School of Chemistry
Supervisors	Principal supervisor: Dr Lifeng Ding(XJTLU) Co-supervisor: Dr Kang Tao(JITRI) Co-supervisor: Dr Haifei Zhang(UoL)
Application Deadline	Open until the position is filled
Funding Availability	Funded PhD project (world-wide students)
Project Title	Study on the tunable cell structure of polymer foam via supercritical fluid micro-foaming
Contact	Please email Lifeng.Ding@xjtlu.edu.cn or tao.kang@foxmail.com

Requirements:

The candidate should have a first class or upper second class honours degree, or a master's degree (or equivalent qualification) in Chemistry, Chemical Engineering, Material science or Physics.

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:

This PhD project is a collaborative research project between XJTLU (<http://www.xjtlu.edu.cn>) in Suzhou and JITRI (Jiangsu Industrial Technology Research Institute) Advanced Polymer Materials Research Institute. The student will

be registered as an XJLTU PhD student but is expected to carry out the major part of his or her research at the Institute in Nanjing.

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 Changzhou, the PhD candidate will be provided with monthly living allowance at a standard RMB 5000 by JITRI Advanced Polymer Materials Research Institute.

Project Description:

The polymer microcellular foam with unique structure and performance has important application value in the industrial field. The cell structure of the foamed polymer, which is prepared by the traditional foaming process, is irregular. The compatibility of the traditional blowing agent is poor and the phase separation is hard to control during foaming. The new supercritical fluid extrusion foaming process generally uses supercritical carbon dioxide as a blowing agent, which has good compatibility with polymer melt, is non-toxic, harmless, environmentally friendly and has no residue. The project conducts a study on the rheological properties and nucleation kinetics of polymer melts in the process of supercritical fluid extrusion and foaming, so as to achieve precise control of the structure of polymer micro-foamed materials to meet the requirements of different application fields. First, by modifying the polymer, the crystallization behavior of the polymer is controlled to enhance the melt strength and improve the foamability of the polymer. Then, based on the optimized modified polymer melt, the supercritical carbon dioxide extrusion foaming process was used to explore the influencing factors of cell nucleus growth and cell shape, and establish a physical model of cell growth during the foaming process to realize the control of cell shape. The precise control of the open-cell micro-foamed polymer material with the three-dimensional connected pore structure is obtained.

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:

JITRI co-supervisor:

Dr. Tao Kang., Professor of Jiangsu Industrial Technology Institute. Tao graduated from University of Science and Technology of China in 2008, and then worked at Ningbo Institute of Materials Technology and Engineering, Chinese Academy of Sciences until 2014, meanwhile he was a postdoctoral fellow at Shanghai Research Institute of Organic Technology, Chinese Academy of Sciences (2009-2011). Tao served as R & D director of Orinko Materials Group until 2014; and then served as director of Light Materials Division of Advanced Polymer Materials Institute . Dr. Tao has been engaged in the development and industrialization of innovative technologies and products in the field of polymer materials. He has published more than 20 articles, has applied for more than 70 patents (67 invention patents, 33 authorized). The products he developed have achieved an output value of hundreds of millions of yuan.

XJTLU Principal Supervisor:

Dr Lifeng Ding joined the Department of Chemistry at XJTLU as a Lecturer in 2013 and became an Associate Professor in 2021. Prior to this position, He worked as a European Union Marie-Curie research fellow at the University of Surrey. His current research interest lies in the computational design and understanding of nano-structured materials and related functional applications, particularly for clean energy. He has published more than 40 journal papers, including Science, ACS AMI, JPCC etc.

How to Apply:

Interested applicants are advised to email Lifeng.Ding@xjtlu.edu.cn or tao.kang@foxmail.com 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