****

臺灣大學應用力學研究所

演　講　公　告

****

主 講 人：邱惠和 教授
　　　　　香港科技大學 機械與航空工程系

講　　題：Distinct Features of Micro/Nanostructured Surfaces for Fluid Flow and Heat Transfer Manipulations

摘　　要： 如附件

主 持 人： 王安邦教授

時　　間： 114年11月24日（星期一）下午2時20分開始

地　　點： 臺灣大學應用力學研究所國際會議廳

☆☆ 歡 迎 聽 講 ，敬 請 張 貼 ☆☆

Distinct Features of Micro/Nanostructured Surfaces for Fluid Flow and Heat Transfer Manipulations

Huihe Qiu[1,2]

1. Department of Mechanical and Aerospace Engineering
The Hong Kong University of Science and Technology
Clear Water Bay, Kowloon, Hong Kong

2. Sustainable Energy and Environment Thrust
The Hong Kong University of Science and Technology (Guangzhou)
Nansha, Guangzhou

Abstract

Micro/nanostructured surfaces have attracted attention in controlling contact line dynamics, fluid flow, and heat transfer. These kinds of surfaces are promising for anti-icing and cooling of electronic devices. In this talk, the questions of the effects of micro/nanostructured surfaces on droplet dynamics, heat transfer, internal flow, boiling, local concentration and contact line dynamics, as well as the associated physical phenomena will be addressed. A novel measurement technique that can simultaneously measure the internal flow field and the local concentration at the contact line of a multicomponent droplet will be presented. The coupling effect between the velocity and concentration is particularly pronounced near the contact line, where local ethanol concentration gradients drive unique flow patterns and significantly influence the overall evaporative behaviors. It is found that the functional surface with biphilic/superbiphilic wettability patterns can manipulate the contact line dynamics that enhance the fluid flow and heat transfer. Theoretical analysis of the depinning behavior of the multicomponent droplet on a nanostructured surface by combining the simultaneous local concentration field with the velocity field in the vicinity of the contact line area.

Biography:

Professor Qiu received his Ph.D. degree from Institute of Fluid Mechanics, *LSTM*, at the University of Erlangen, Germany in 1994. He joined The Hong Kong University of Science and Technology (HKUST) in 1994 and became the Head of Department of Mechanical and Aerospace Engineering and Director of the Building Energy Research Center of the HKUST Fok Ying Tung Research Institute in 2018. He is the Head and Professor of Sustainable Energy and Environment Thrust at the Hong Kong University of Science and Technology, Guangzhou campus (HKUST GZ). Prof Qiu's research has focused on fluid dynamics and heat transfer, bioinspired propulsion and flapping wing aerodynamics, transport phenomena in microscale multiphase flows with a book published by Cambridge University Press, 4 book chapters, 136 papers in various prestigious journals and 140 papers in conference proceedings. Prof. Qiu is the founding Editor-in-Chief and Associate Editor of two international (Q1) journals. He has been invited to give 40 plenary and keynote speeches at International Conferences. He is the Chairman of several International Conferences and the recipient of several international awards including Best Paper Award of Measurement Science & Technology, Institute of Physics (IOP) in 1994 and Nakayama-Wei Award (2023).