Queensland Micro- and Nanotechnology Centre

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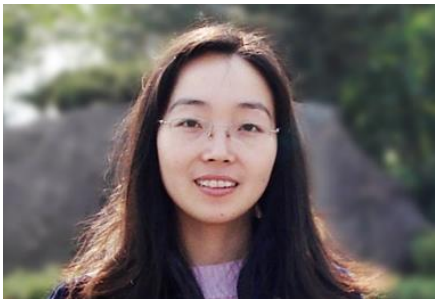
Speaker: [Associate Professor Chun-Xia Zhao]
Australian Institute for Bioengineering
and Nanotechnology (AIBN)
The University of Queensland
St Lucia



Date: Friday 25 January 2019

Time: 11.00 am

Venue: QMF building (N74) Room 1.08, Nathan Campus

Title: **Platform Technologies for Accelerating the Translation of Nanomedicine**

Abstract

Engineered nanomaterials hold great promise for the diagnosis and treatment of cancer. A wide range of nanomaterials have been developed ranging from polymer particles to lipids, proteins and other synthetic compounds. However, only a few cancer nanomedicines have been approved by the FDA (such as Doxil, and Abraxane). This demonstrates the huge gap between laboratory research and clinical translation of cancer nanomedicines, mainly due to two main barriers: (1) challenges in large-scale production of nanomedicine with good reproducibility and well-controlled properties due to complex multi-step synthesis procedures; (2) incomplete understanding of the interactions between nanoparticles and biological systems. To address these fundamental issues, my lab has been focusing on the development of facile one-step or one-pot approaches for producing multifunctional nanoparticles for targeted drug delivery. We developed platform technologies for producing nanoparticle libraries with reproducible and systematically varied properties (liposomes, polymer nanoparticles and silica nanocapsules). Through systematic studies, a new physical attribute – nanoparticles' mechanical property – was discovered to play a crucial role in regulating their biological functions. We have also developed in vivo mimicking chips (Tumor-on-a-Chip, Tumor-Vasculature-on-a-Chip) to fundamentally understand, for example, the role of EPR effect in nanoparticle extravasation and tumor accumulation.

Brief Biography

Associate Professor Chun-Xia Zhao is an Australian Research Council (ARC) Future Fellow and Group Leader at Australian Institute for Bioengineering and Nanotechnology at The University of Queensland, Australia. She leads a research team with a focus on the development of micro and nanostructures based on bio-inspired engineering and microfluidics for controlled release and drug delivery. She has been focusing on innovative research as evidenced by her five patents. A/Prof Zhao's research has attracted more than $4M in research funding since 2011, including four Australian Research Council projects as the lead investigator, two national prestigious fellowship, night UQ grants, as well as industry funding. She has been recognised for scientific excellence with a 2016 UQ Foundation Research Excellence Award. She has been appointed as a member of the 2019 ARC College of Experts (2019-2021). She has built extensive collaborations with scientists at top universities such as Harvard University, Cornell University, etc. She serves as the Editor-in-Chief, Editorial Board member for several journals.

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ALL WELCOME