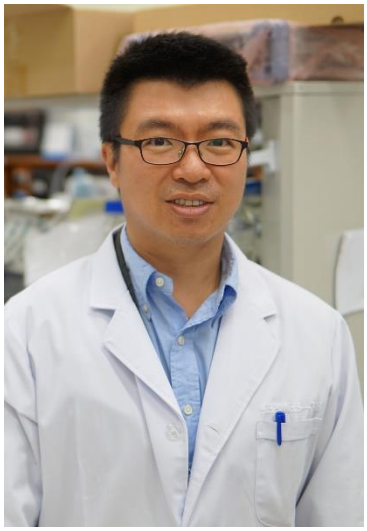
香 港 大 學
THE UNIVERSITY OF HONG KONG

Professor Anderson SHUM
Professor, Department of Mechanical Engineering
Faculty of Engineering, The University of Hong Kong

Biography



Professor Anderson Shum is a Professor at the Department of Mechanical Engineering and Assistant Dean (Special Projects) of the Faculty of Engineering, The University of Hong Kong. He received his B.S.E. degree, summa cum laude, in Chemical Engineering from Princeton University, S.M. and Ph.D. in Applied Physics from Harvard University. He joined The University of Hong Kong in 2010.

Professor Shum is internationally recognized for his works in microfluidics and soft matters, particularly on his pioneering contributions in combining all-aqueous formulations and droplet microfluidics. His research focuses on the engineering of aqueous droplet interfaces for designing new bio- and cyto-compatible materials. His team has pioneered the generation and control of all-aqueous emulsion drops using microfluidic techniques, and demonstrated their ability to encapsulate delicate active biomolecules and to mimic complex biological droplets. When combined with microfluidic droplet manipulation techniques, designer biomaterials with excellent compatibility can be assembled for precision delivery of tunable quantities of active ingredients. He has over 110 peer-reviewed publications and his research interests include emulsions, biomicrofluidics, biomedical engineering and soft matters.

With the Croucher Senior Research Fellowship, he will engineer a new type of biomaterials, which are formed by assembling compatible droplets, each encapsulating and compartmentalizing a different active ingredient that can be cells or biomolecules. Conventional active ingredients are synthesized and packaged in mass. However, emerging active ingredients often take into account the uniqueness of each receiving individual, and even the heterogeneity among the tissues and cells of the same individual. To achieve the level of precision in isolating and formulating the small quantity of these active ingredients, the encapsulation and compartmentalization need to be qualitatively different. The delivery vehicles also need to be tailorable and compatible. Besides the biomedical applications, the research also has a fundamental value, as it crosses the disciplinary areas of interfacial science, biotechnology and biomaterials.

Awards and honours

2019 Croucher Senior Research Fellowship, The Croucher Foundation
2019 NSFC Excellent Young Scientist Fund 優青（港澳）
2019 Young Scientist Award in Microsystems and Nanoengineering Summit 2019
2018 IEEE Nanomed 2018 New Innovator
2018 Founding member of Hong Kong Young Academy of Sciences
2018 HKU Outstanding Young Researcher Award 2016-17
2017 Fellow of the Royal Society of Chemistry
2012 Early Career Award by the Research Grants Council of Hong Kong