Nanoscale Organisation and Dynamics Group
University of Western Sydney

Salt on a chip: versatile "wall-less" microreactors achieved by microcontact printing of ionic liquids

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Abstract
Ionic liquids are a class of solvents that typically have negligible vapour pressure with good thermal and chemical stability and electrical conductivity. They have demonstrated applications in many fields of chemistry, ranging from electrochemistry, organic synthesis to biological applications. However, the use of ionic liquids in macro scale applications is often not efficient owing to their poor mass transport properties as a result of intrinsic high viscosities.

This presentation will introduce our recent effort towards miniaturised ionic-liquid systems (Nature Communication, 2014, 5, 3744), where micro and nano scale ILs bring enhanced mass transport rate of dissolved molecules and significantly improved efficiency over macro systems. A facile approach will be demonstrated to combine the non-volatile and versatile nature of ionic liquids with microcontact printing to fabricate extremely small IL drops and microstructures as open, "wall-less" microreactors and sensors on a chip surface that can be part of an electrochemical or spectroscopic system. The results suggest that miniaturized IL systems can be used to solve the problems of solvent volatility and slow mass transport in viscous ILs in lab-on-a-chip devices, providing a versatile platform for a diverse number of applications.

Profile
Chuan Zhao is currently a Senior Lecturer and ARC Australian Research Fellow in the School of Chemistry at the University of New South Wales. He received his PhD from Northwest University, China, in 2002, and worked as postdoctoral fellow at Carl von Ossietzky Universita¨t Oldenburg, Germany and Monash University. He was appointed as a Lecturer at UNSW in 2010, and promoted to Senior Lecturer in 2011. His recent research interest lies in nanoelectrochemistry, ionic liquids chemistry and nanomaterials, and their implications for electrochemical energy and biomedicine applications.

Staff and students at all levels are welcome to attend.

Venue and Time:
This talk will be held on Wednesday July 23 at 2 pm at the Campbelltown Campus in Building 21, Lecture Theatre 6 (CA 21.G.18).

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