

International Conference and Expo on

# Separation Techniques

August 10-12, 2015 San Francisco, USA

## Advanced separation technologies based on polymeric membranes for clean water and clean energy

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Clean water, clean energy, global warming and affordable healthcare are four major concerns globally resulting from clean water shortages, high fluctuations of oil prices, climate changes and high costs of healthcare. Clean water and public health are also highly related, while energy is essential for sustainable prosperity. Among many potential solutions, advances in membrane technology are one of the most direct, effective and feasible approaches to solve these sophisticated issues. Membrane technology is a fully integrated science and engineering which consists of materials science and engineering, chemistry and chemical engineering, separation and purification phenomena, environmental science and sustainability, statistical mechanics-based molecular simulation, process and product design. In this presentation, we will introduce our efforts on advanced membrane separation technologies for clean water (nano-filtration, membrane distillation, forward osmosis) and clean energy (osmotic power generation, natural gas, hydrogen, and biofuel). Technology breakthroughs in each area will be highlighted.

### Biography

Tai-Shung Chung had worked for US industries for 15 years before joining NUS in 1995. He is a Subject Editor of Chemical Engineering Research and Design and editorial board members of 15 journals including J. Membrane Science, AIChE J., I & EC Research, Separation and Purification Reviews, and others. He was an inventor of Hyflux Kristal™ 600 ultrafiltration membranes. He received IES (Institution of Engineers, Singapore) Prestigious Engineering Achievement Award, Hyflux-SNIC (Singapore National Institute of Chemistry) Award in Environmental Chemistry in 2010, and Research Leadership Award at NUS in 2011. He became a Fellow in the Academy of Engineering Singapore in 2012. He received the 2014 Underwood Medal for Exceptional Research in Separations from IChemE (Institute of Chemical Engineers, UK).

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