

Inaugural Hyflux-SNIC Award in Environmental Chemistry 2010

Professor Chung Tai-Shung (Neal) of NUS

Given a pressing worldwide water shortage and a highly fluctuating oil price, an urgent need exists for high performance ultra-filtration hollow fiber membranes and alternative desalination technologies to make available cheap and reliable sources of water for the world's growing population and industrial needs.

The approach taken by Prof. Chung to solve the global water scarcity problem has been (1) to work with the industrial leader (Hyflux) to develop high performance ultra-filtration hollow fiber membranes for water recycle and wastewater treatments, and (2) to conduct frontier research on forward osmosis membrane technologies for seawater desalination at less energy consumptions and environmental friendlier process.

Prof. Chung of NUS and Dr. Wei Xi of Hyflux jointly developed Hyflux Kristal™ 600 hollow fiber ultra-filtration membranes for municipal water reuse and industrial wastewater treatments in 2007-2008. This product has been commercialized worldwide. In addition, he and his research group at NUS are the pioneer inventing nanofiltration hollow fiber membranes for osmotically driven membrane processes with impressive performance. Various polybenzimidazole (PBI) membranes with nano-pore sizes have been developed and patented. The resultant membranes have water flux up to 38.0 L/(m²h) and salt flux less than 1.0 g/(m²h) at 25 °C when using 5M MgCl₂ as the draw solution. These membranes greatly reduce energy costs in desalination. Their discoveries set new horizons for future FO developments.

Prof. Chung has also made significant contributions on membrane science and technologies, and developed many novel high-performance membranes for water, environmental, energy, biofuel, biomedical and pharmaceutical applications.

Prof. Chung has been a prolific author and research supervisor. He has supervised 25 PhD's, 13 M-Eng Students and 50 Post-docs. He has been

awarded in excess of US\$ 20m in research grants, holds 60 Patents and has published 340 scientific papers.

As recommended by the review panel, the SNIC Council herein confers the Inaugural Hyflux-SNIC Award in Environmental Chemistry 2010 to Professor Chung Tai-Shung (Neal) of the National University of Singapore.