**Past, Present and Future of Membrane Technology**

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**Abstract**

Membrane technology has become a common separation technology over the past decennia. Membranes are used more and more for the production of drinkable water from groundwater, surface water and wastewater. Membranes are now competitive versus conventional techniques. Desalination is predominantly used to eradicate the problem of water scarcity. The sustainability of all desalination processes depends mainly on the reduction of energy costs (production cost) and the increase in water recovery. Forward osmosis and membrane distillation are emerging technologies for sustainable desalination. This presentation discusses the evolution of membrane technology in desalination technology. Therefore, it might be useful to recall the results of few decades of membrane development. Here we will discuss membrane processes of forward osmosis and membrane distillation and the advancements in membrane material and modules. We also discuss the capability of membrane distillation in treating highly concentrated aqueous solutions derived from other desalination processes. Furthermore, the advancements in fabrication of high-performance membrane are reviewed and the performance of different membranes and optimization of membrane distillation process are summarized.