

## **Singapore Stanford Partnership Programme**

### **MS Project MS08-07**

#### **Observation of Membrane Biofouling Layer on Membrane Surface**

**Darren Sun**

The membrane bioreactor (MBR) is one of the most prevailing advanced water reclamation technology. However, fouling, especially biofilm formed by EPS which is a protein and sugar based bio-product on the membrane surface causes an increase in filtration resistance and a reduction in membrane permeate flux. The microbial action on the membrane material may lead to irreversible bio-fouling which reduce the membrane lifespan. Up-to-day, we are unclear about the biofilm structure of long sludge retention (SRT) which is a biofouling layer on the membrane surface. Therefore, it is important to understand the biofilm structure on the membrane surface prior to the chemical cleaning process for the water reclamation. This project is to develop an innovative sample preparation method for the biofilm examination and further to elaborate of biofilm structure using direct observation confocal laser microscope and scanning electron microscope techniques.