Title:

Oxygen-selective mixed ionic-electronic conducting (MIEC) membrane modelling

Research Partner:

Prof. Shaomin Liu (Curtin University, Bentley, Australia) and Dr. Naitao Yang (Shandong University of Technology, China)

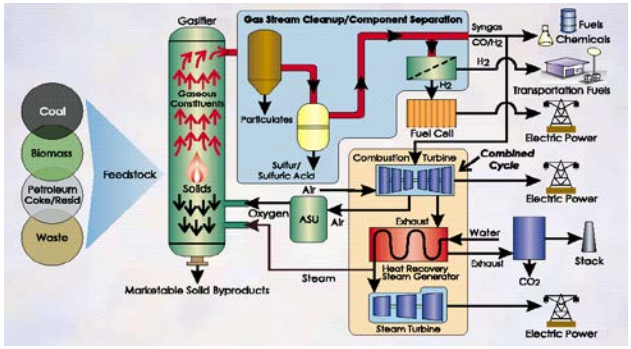
Contact Person:

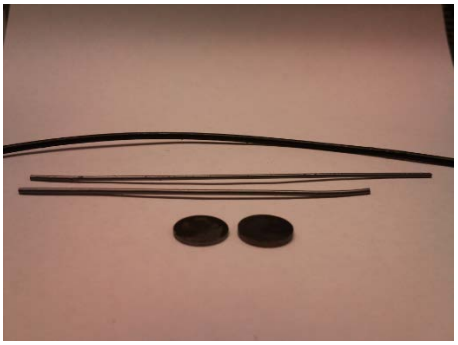
Dr. Jaka Sunarso (jsunarso@swinburne.edu.my)

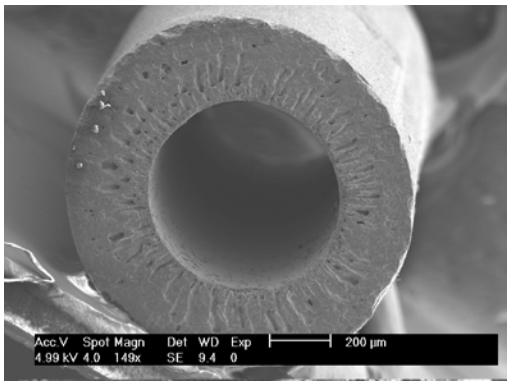
Description:

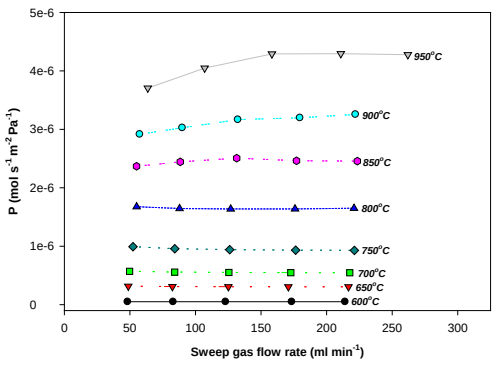
The aim of this project is to model oxygen permeation behaviour of MIEC-based disk and hollow fibre membrane to provide insights into the dominant operation variables and the limiting factors. Such insights provide guidelines for subsequent membrane optimisation and development to advance the existing membrane performance and efficiency. Oxygen-selective MIEC membrane is a crucial technology component that enables clean coal combustion technology such as oxyfuel combustion.

Graphical Abstract:









Title:

Biorefinery-based conversion of biomass into value-added products

Research Partner:

Dr. Suryadi Ismadji (Widya Mandala Catholic University, Surabaya, Indonesia)

Contact Person:

Dr. Jaka Sunarso (jsunarso@swinburne.edu.my) and Dr. Jiuan Jing Chew (jchew@swinburne.edu.my)

Description:

The aim of this project is to evaluate the potential of transforming lignocellulosic biomass such as palm trunks, palm fronds, and etc, into fuels and value-added chemical via transesterification and pyrolysis processes. Biorefinery concept that integrates biomass conversion processes and equipment to generate fuels, power, heat, and value-added chemicals from biomass has high potential to replace petroleum-based resources with minimum impact to the environment.

Graphical Abstract: