

GRA Position (Master only) at the Fuel Cell Institute (Institut Sel Fuel), UKM

Research Background:

Bioelectrochemical reductions of carbon dioxide to formate have been demonstrated using microbial electrosynthesis cells (MSCs), however, the rate of the conversions is still slow. MSCs require better catalysts to perform the reaction under minimum interferences. Besides, the contribution of the electricity-generating bioanode are also important especially in reducing energy consumption of the (bio)cathode in a MSC application. Most of the studies were only focused on half-cell experiments rather than the whole cell system. Therefore, the study will be focused on finding a better catalyst for cathode, either biotic or abiotic, and then integrating it with bioanode to form an optimal MSC.

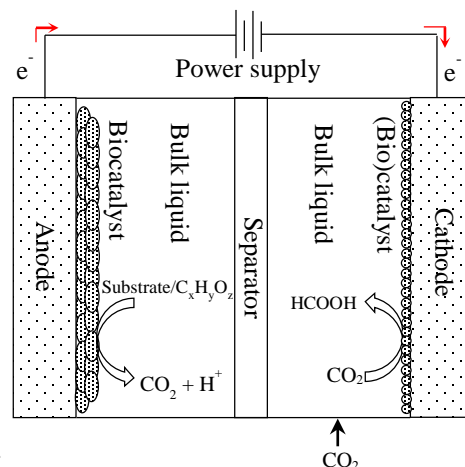


Figure 1 Schematic of microbial electrosynthesis cell

To perform the study, a master student position is currently available with the Biocell Fuel Group in the following:

Improvement of (Bio)electrochemical reduction of carbon dioxide to formate using microbial electrosynthesis cell (MSC)

- Synthesise and characterise composited catalysts and study their electron transfer mechanisms under electrochemical reduction reaction
- Evaluate the performance and identify the critical parameter of the catalysts that can further increase formate production in a MSC
- Study the integration between (bio)cathode and bioanode and provide strategies in optimising carbon dioxide reduction and formate production in the MSC

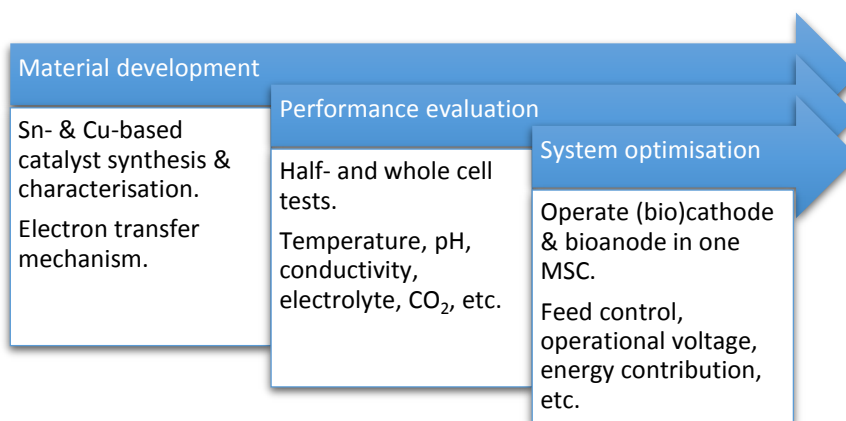


Figure 2 Research flowchart

Interested candidates are invited to email CV and motivation letter to Dr. Lim Swee Su (limss@ukm.edu.my).