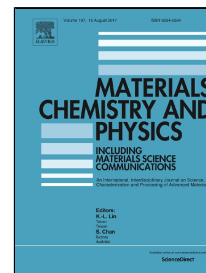


# Accepted Manuscript

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PII: S0254-0584(17)30547-3

DOI: 10.1016/j.matchemphys.2017.07.038

Reference: MAC 19845

To appear in: *Materials Chemistry and Physics*

Received Date: 13 June 2016

Revised Date: 23 November 2016

Accepted Date: 11 July 2017

Please cite this article as: Elangovan Mahendiravarman, Dharmalingam Sangeetha, Application of Polysulphone based Anion Exchange Membrane Electrolyte for Improved Electricity Generation in Microbial Fuel Cell, *Materials Chemistry and Physics* (2017), doi: 10.1016/j.matchemphys.2017.07.038

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## Application of Polysulphone based Anion Exchange Membrane Electrolyte for Improved Electricity Generation in Microbial Fuel Cell

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### Abstract

The present study has been designed on the synthesis and utilization of quaternized polysulphone (QPSU) both as a membrane and a catalyst binder for microbial fuel cells (MFCs). The effect of surface roughness on biofilm growth and the impact of oxygen and specific substrate crossover of the anode and cathode for both membranes was studied. Besides, the effect of specific cathode binders of sulphonated poly (sulphone) (SPSU), Quaternized poly sulphone (QPSU) and Poly tetra fluoro ethylene (PTFE) on the overall cell performance was measured using their electrochemical performance studies such as linear sweep voltammetry (LSV), cyclic voltammetry (CV) etc. The performance of synthesized membrane was compared to a commercially obtained anion exchange membrane AMI-7001. Based on the results obtained, QPSU can be considered not only as a suitable membrane alternative to replace commercially available AEM but also as an effective binder material for MFC applications.

**Keywords:** Anion exchange membrane, Polysulphone, Surface roughness, Ionic binders, Biofilm.

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