ABSTRACT NO.: **545**

TITLE: **Sulfonated Titanium Nanotube based Nano-composite blend membranes for Fuel Cell applications.**

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The use of fossil fuels account for a large amount of the world energy demand. However, this non-renewable resource is limited in amount and depletion is inevitable. Apprehension about the environmental impact of harmful fuel emissions as well as ways of improving energy conversion efficiency have motivated the interest in the development of Fuel Cells as an alternative means of sustainable fuel. In order to develop Fuel Cell technology one must make them cost effective and one way this can be achieved is by replacing Nafion® membrane with some new equally efficient electrolyte membrane. In the present project, new nano-composite electrolyte membrane has been developed using a blend composition of PVIm and PVdF-HFP with sulfonated nanotubular titania. Sulfonated nanotubular titania has been successfully synthesized in the lab and confirmed using XRD and NMR studies. The synthesized nanocomposite membranes have also been characterized using XRD, SEM, IEC and Impedance Spectroscopy studies.