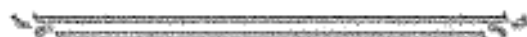


TITLE: Ternary Acid/Base based polymer electrolyte membrane having polystyrene.
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Fuel cells are devices that convert chemical energy to electrical energy from an on-board energy source. This technology of recent times has been under active development and finds a place in stationary applications, portable applications and transportation applications. The various problems observed in electrolyte membranes have been investigated and shows a needs for development of new membranes.

In the present project, new proton conducting polymer electrolyte membranes have been synthesised based on ternary acid/base system approach. Polystyrene (PS) has been used as polymer whereas phosphoric acid (PA) and dimethylacetamide (DMA) are used as acid and base respectively.

Various ionic liquids have been developed for various compositions of PA and DMA. The highest value of conductivity observed for PA: DMA (1: 9) was found to be 1.6×10^{-2} . X-ray diffraction (XRD), (TGA), (DSC) and (SEM) have been carried out and used to determine various electrical, structural and thermal properties of the membranes.