

DEVELOPMENT AND CHARACTERIZATION OF POLYMERIC HOLLOW FIBER MEMBRANE WITH HIGH CO₂ SEPARATION PERFORMANCE

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In this study, we prepared the polyimide based hollow fiber membrane with High CO₂ permeance property. In other to prepare high permeable gas separation membrane, we synthesized novel polyimide material using 6FDA, Durene and PEG monomers. And then general property of the polyimide membrane is characterized using flat sheet type of membrane. The membranes were prepared under various controlled conditions such as retention time and concentration of the polymer. And then the hollow fiber membrane is also prepared and then characterized for confirmation of their potential. The Ionic liquid mainchain polymer is also developed to investigate the gas permeability and potential for utilization to coating materials of hollow fiber membrane. Polyimide with pendant ionic liquid (Im-PpC) membrane showed the high $\alpha(\text{CO}_2/\text{N}_2)$ value and the main chain polymer prepared by UV crosslinking with PEG & ILMP crosslinker also showed high $\alpha(\text{CO}_2/\text{N}_2)$.

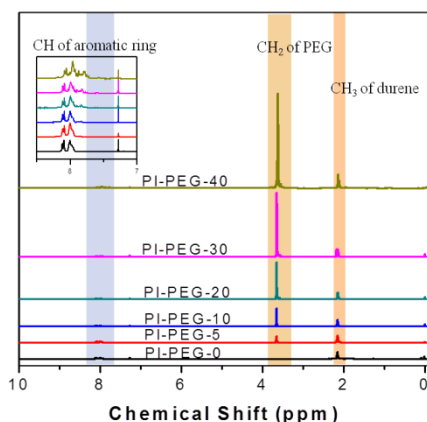


Figure 1 – ¹H NMR of synthesized polyimide material