

## Enhancement of CO<sub>2</sub> Permeability through PVC-POEM Graft Copolymer Membranes via Vapor Treatment

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Membrane science technology for gas separation has been going through significant development and growth as its variety advantages low energy demand in progress, facile preparation and potential to apply other system when it is compared to other separation processes like adsorption and cryogenic distillation. To overcome and enhance gas permeability of polymer membrane, we researched systematic study of solvent vapor treated membranes and their properties with PVC-POEM graft copolymer. Increase of 36% of CO<sub>2</sub> permeability from 107 to 145 Barrer was reported when copolymer membrane was treated with acetone solvent vapor while permeability reduced to 49% and 55% treated with selective (methanol) or poor solvent (hexane), respectively. We suggest a qualified interaction between polymer and the solvent vapor is the significant factor to manufacture the nanostructure of graft copolymers, which could be the key controlling the gas permeation properties of the membranes.