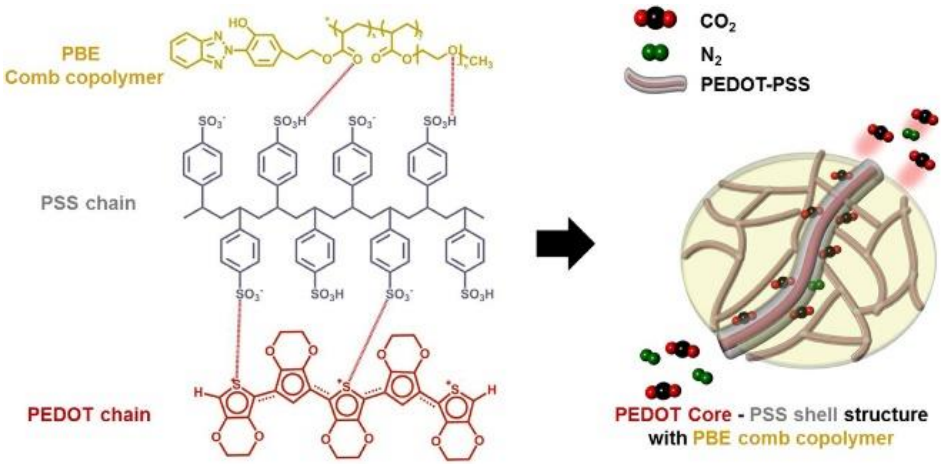
Improved CO_2 separation performance using PEDOT-PSS embedded all-polymeric membrane

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In this study, poly(3,4-ethylenedioxythiophene) polystyrene sulfonate (PEDOT-PSS) was introduced into polymer gas separation membrane. The mixed matrix membrane composed of poly(2-[3-(2H-benzotriazol -2-yl)-4-hydroxyphenyl] ethyl methacrylate)-poly(oxyethylene methacryalate) (PBEM-POEM) comb copolymer matrix and PEDOT-PSS filler. Incorporation of PBEM-POEM makes isolated PEDOT-PSS chain transform into a fiber-like interconnected structure due to hydrogen bonding interaction. This structure could act as a facilitated pathway for enhancing gas diffusivity through the membrane. The best performance of prepared PEDOT-PSS/PBEM-POEM composite membranes was CO_2 permeability of 59.6 Barrer with a CO_2/N_2 selectivity of 77.4, being close to the 2008 Robeson upper bound.