# Efficient $CO_2/N_2$ Separation of MOF-LDH/XLPEO Membranes

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Metal-organic frameworks (MOFs) are emerging porous materials used for $CO_2$ separation because of its high surface area and tunable structure. Recently, several research works have been conducted to fabricate polymer composites containing MOFs as fillers to make mixed matrix membranes (MMMs). Herein, MMMs incorporating $ZnCr-LDH/NH_2-MIL-125(Ti)$ as filler particles in cross-linked polyethylene oxide (XLPEO) polymer were fabricated. Different loading amounts of filler ranging from 0 to 10 wt % were used in XLPEO. The membranes were characterized by SEM, EDX and XRD analysis. Gas separation properties of these MMMs were investigated and compared with the original XLPEO membrane. The results indicate that the $ZnCr-LDH/NH_2-MIL-125(Ti)$ acted as efficient fillers in the matrix and increased the $CO_2$ permeance as well as $CO_2/N_2$ selectivity. This improved performance is attributed to the homogeneous dispersion of filler particles in the XLPEO matrix. This work provides useful insight for the efficient separation of $CO_2$ from flue gases by MMMs. Details of the work will be presented.