

CO₂ Separation Using Thin Film Membrane with Metal–Organic Polyhedra

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Due to the demand of CO₂ capture from various energy sources, membrane technology has attracted worldwide interest in CO₂ separation from other gases. Among various membranes, thin film mixed–matrix membranes with nanomaterials have drawn great attention to reach high CO₂ permeance and selectivity. Metal–organic polyhedra (MOPs) assembled from metal ions and organic ligands have discrete hydrophilic cavities accommodating CO₂ molecules. Herein we report the fabrication of thin film membranes with hydrophilic EG3–MOPs, and their CO₂ separation properties from CO₂/N₂ and CO₂/CH₄ mixtures. SEM analysis revealed that EG3–MOPs are well dispersed in the membranes without agglomeration representing excellent compatibility between MOP and PEGDMA9 polymer. Owing to regular dispersion of MOPs with high CO₂ affinity in the thin films, these membranes showed high CO₂ separation properties from the mixture gases. Details of the work will be presented.