

## Large Pore Zeolitic Imidazolate Frameworks for Hydrocarbon Separation

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Metal organic frameworks (MOFs) are microporous crystalline materials with pore tunability. Due to partial organic nature, MOFs are preferred fillers in fabricating the mixed matrix membranes (MMMs) without interfacial voids. Among various MOFs, zeolitic imidazolate frameworks (ZIFs) have gained interest due to its stability under humid conditions. Recently, ZIFs with extra-large pore dimensions with 12-membered ring structure have been reported. These large pores are useful in the separation of hydrocarbons with a kinetic diameter larger than 4.5 Å. In this study, energy-efficient separation of light-to-heavy hydrocarbons will be demonstrated using large pore ZIFs. Entropic contribution for the diffusion selectivity in ZIFs are investigated thoroughly. Especially, the corresponding membrane separation performance are tested for C<sub>3</sub> and C<sub>4</sub> gases in the form of MMMs.