# Propylene/Propane separation by ZIF-8 nanoplate Mixed Matrix Membranes

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Many different filler materials are used in mixed-matrix membranes (MMMs), but two-dimensional (2D) nanomaterials are competitive filler compared to isotropic materials due to high barrier effect and high aspect ratio. We fabricated Zeolitic Imidazolate Framework-8 (ZIF-8) nanoplate as a new inorganic filler material by converting ZnOH nanosheet with addition of 2-methylimidazole. To separate propylene/propane, we successfully synthesized 6FDA-DAM based MMMs which contain as-synthesized ZIF-8 nanoplates with low interfacial gap and good compatibility with the polymer matrix. As a result of horizontally oriented ZIF-8 nanoplates in the polymer matrix, more tortuous paths were created. Accordingly, ZIF-8 nanoplate MMMs are predicted to show greater selectivity on separating propylene/propane compared to pure 6FDA-DAM membrane and previously reported ZIF-8-based MMMs.