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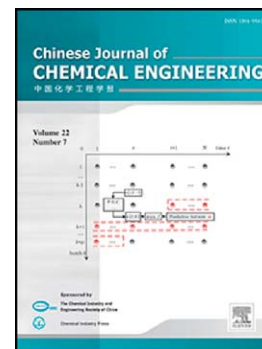
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# Construction of molecule-selective mixed matrix membranes with confined mass transfer structure<sup>☆</sup>

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**Abstract** Extraordinary mass transfer phenomenon is usually found when the small molecules pass through a confined structure, whose effective size is commensurate with the mean free path of the molecules. Small changes in the confined mass transfer structure (including size, morphology and properties) will lead to significant fluctuations of the mass transfer coefficient. The mass transfer of the penetrant molecules in the dense membranes for pervaporation, gas separation and so on, is located in the scope of confined mass transfer. Incorporating nanofillers into polymer matrix to construct mixed matrix membranes (MMMs) is an effective approach to tune the confined mass transfer structure and enhance the performance of the widely used polymeric membranes. This review focuses on the construction and manipulation of the confined structure in the polymeric membranes *via* incorporating one-dimensional (1D), two-dimensional (2D) and three-dimensional (3D) fillers. The comparison of the MMMs for pervaporation is summarized, and the research prospective of the MMMs is provided.

**Keywords** membranes, pervaporation, separation, confined mass transfer structure, dimensional

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