

研究论文

香草醛系列化合物分子印迹聚合物膜的渗透特性

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摘要 以香草醛(Van)或邻香草醛(o-Van)为模板分子, 用紫外光引发原位聚合, 分别制备了以尼龙和聚偏氟乙烯微孔滤膜为支撑材料的分子印迹复合膜, 并用紫外分光光度法研究了模板分子与功能单体之间的相互作用. 模板分子及竞争物的混合溶液渗透实验结果表明, 支撑材料对膜选择性传输趋势基本没有影响, 但选用合适的支撑材料会得到更理想的分离效果; 当竞争物尺寸小于模板分子时, 尺寸效应起主要作用, 竞争物优先传输; 当模板分子与竞争物尺寸相近时, 尺寸效应不起作用, 模板分子的选择性识别位点及与其相匹配的孔穴起主要作用, 模板分子优先传输; 当竞争物尺寸大于模板分子时, 则尺寸效应和模板分子的选择性识别位点及与其相匹配的孔穴同时起作用, 故模板分子优先传输.

关键词 [分子印迹技术](#) [分子印迹聚合物膜](#) [膜分离](#) [香草醛](#)

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Permeation Characteristics of Molecularly Imprinted Polymer Membranes Synthesized by Compounds of Vanillin Series

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Abstract Using vanillin or *o*-vanillin as the template molecules, composite molecularly imprinted membranes(MIMs) with Nylon or PVDF as supporting membrane were prepared *via in-situ* polymerization by UV-irradiation. The interaction between the template molecule and the functional monomer(methacrylic acid) was evaluated by absorption spectroscopy. The permeation experiment which was carried out with the mixed solution containing template and its competitive analogue shows that the transport trend of the substances through the MIMs hardly has something to do with the supporting material. But a perfect separation will be obtained when the chosen supporting material is suitable. When the competitive analogue is smaller than the template, it preferentially transports through the MIMs because of the size effect. But when they are the same in size, the size effect doesn't work. Then the template transports faster due to its complementary functional groups and shape with the imprinted sites on the MIMs. And when the competitive analogue is bigger than the template, the facilitated transport of the template is attributed to both the size effect and its complementary functional groups and shape with the imprinted sites.

Key words [Molecularly imprinting technique](#) [Molecularly imprinted polymer membrane](#) [Membrane separation](#) [Vanillin](#)

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