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表面光接枝共聚法制备高通量分子印迹膜

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摘要 Molecular imprinted polymer membranes (MIM) combine the merits of molecular imprint and membrane technology. In this work, a very thin of imprinted polymer that can specifically and selectively absorb the basic template (adenine) was grafted on the surface of polyvinylidene fluoride membrane by photo-grafting copolymerization. Because the molecular imprinted polymer is grafted on the surface of the matrix membrane without blocking the membrane pores, the resultant MIMs have high flux as microfiltration membrane (0.26 mol·m^-2·h^-1 of template and flux for distilled water was 3.6 ml·mim^-1·cm^-2 at 0.8 MPa). Moreover, the MIMs can absorb/desorb template molecules rapidly. Usually, it only takes several minutes for MIMs to absorb more than 75% of the template (adenine) in aqueous solution. And the influences of the type and amount of the functional monomers, the amount of the cross-linker on the absorption capability are discussed to determine the optimal preparation conditions.

关键词 分子 聚合物 薄膜技术 MIMs 共聚合反应 亚乙烯基氟化物

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Molecular Imprinted Membrane with High Flux by Surface Photo-grafting Copolymerization

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Abstract Molecular imprinted polymer membranes (MIM) combine the merits of molecular imprint and membrane technology. In this work, a very thin of imprinted polymer that can specifically and selectively absorb the basic template (adenine) was grafted on the surface of polyvinylidene fluoride membrane by photo-grafting copolymerization. Because the molecular imprinted polymer is grafted on the surface of the matrix membrane without blocking the membrane pores, the resultant MIMs have high flux as microfiltration membrane (0.26 mol·m^-2·h^-1 of template and flux for distilled water was 3.6 ml·mim^-1·cm^-2 at 0.8 MPa). Moreover, the MIMs can absorb/desorb template molecules rapidly. Usually, it only takes several minutes for MIMs to absorb more than 75% of the template (adenine) in aqueous solution. And the influences of the type and amount of the functional monomers, the amount of the cross-linker on the absorption capability are discussed to determine the optimal preparation conditions.

Key words molecular imprinted membrane; photo-grafting copolymerization; adenine

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