论文

单体结构对聚酰胺类复合膜分离性能的影响

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摘要　　采用间苯二甲酰氯、均苯三甲酰氯、均苯四甲酰氯分别与间苯二胺、乙二胺、哌嗪在耐高温杂萘联苯聚醚砜酮(PPESK)超滤膜表面进行界面聚合, 制备了7种具有不同功能层结构的新型超薄复合膜. 采用红外、X射线衍射、原子力显微镜等测试手段对复合膜结构进行表征, 测试了7种复合膜对0.2%的Na_2SO_4水溶液, 0.2%NaCl水溶液的分离性能, 分析了单体结构与复合膜分离性能的关系.

RELATIONSHIP BETWEEN INTERFACIAL POLYMERIZATION MONOMER STRUCTURE AND SEPARATION PROPERTIES OF PPESK BASED COMPOSITE MEMBRANES

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Abstract　　Isophthaloyl chloride(IPC),1,3,5-benzenetricarbonyl chloride(TMC),and l,2,4,5- benzeneteraearbonyl tetrachloride(BTTC)were used to polymerize with l,3-benzenediamine(MPDA),l,2- dimethylenediamine(DMDA) and piperazine(PIP)respectively on the surface of thermal stable copolymer poly(phthalazinone ether sulfone ketone) membranes．The components and characteristics of the composite membranes including their IR spectra,morphdogy,polymer crystallinity of the active layers and permeation properties,were carefully studied with various analytical methods such as infrared (IR) spectroscopy,atomic force microscopy(AFM),X-ray diffraction and permeation testing．Results indicated that when MPDA was used as the diamine monomer,the NaCl salt rejection of the composite membranes increased and the flux decreased with the increasing of the crosslink degree of the active layer．When TMC was used as the chloftde monomer,the same tondency was exhibited with the increasing of the tight degree that molecules of the active layers were packed．Thus．according to the special separation system,the molecular stmcture of the function layer can be designed to acquire the best separation properties．

Key words　Interfacial polymerization　Composite membrane　Nanofiltration　Reverse osmosis　Poly（phthalazinone ether sulfone ketone）

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