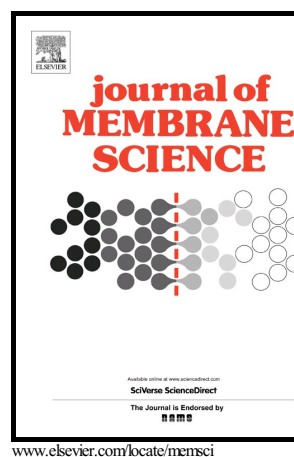


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Relationship between polymer-filler interfaces in separation layers and gas transport properties of mixed matrix composite membranes

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Abstract

To systematically explore polymer-filler interface and its influence, a series of mixed matrix composite membranes were fabricated by coating the mixture comprised of polyvinylamine(PVAm) and different inorganic nanofillers on polysulfone(PS) flat ultrafiltration membranes. Multiwalled carbontube(MWCNT), SiO₂ and ZSM-5 were chosen as pristine inorganic nanofillers, and MWCNT-NH₂, SiO₂-NH₂ and ZSM-5-NH₂ were used as modified inorganic nanofillers. Possible gas transport mechanisms are discussed. A method of assessing the size of interface voids is developed by analyzing a trend in gas permeance with increasing feed pressure. The effect of feed pressure on gas permeance of the mixed matrix composite membranes was investigated. For PVAm-pristine inorganic nanofiller/PS membranes, membrane

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