

عنوان مقاله:

Effect of non-solvent additives and volatile solvent on the performance of polysulfone flat sheet gas separation membranes

محل انتشار:

ششمین کنگره بین المللی مهندسی شیمی (سال: 1388)

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خلاصه مقاله:

The effects of non solvent additives, polymeric additives, polymer concentration and volatile solvent on the performance of polysulfone flat sheet gas separation membranes have been investigated. Flat sheet membranes were fabricated by the phase inversion technique and characterized by gas permeation tests using pure carbon dioxide and methane. The results showed that ideal CO₂/CH₄ separation factor of the improved by the presence of the additives in the following order: PEG400>Ethanol>PVP>Glycerol. This was in accordance with the shift of binodal line to the (polymer)- (solvent(s)/nonsolvent) axis. The critical concentration of polysulfone in 1-methyl-2-pyrrolidone (NMP) solvent was determined by viscometry experiment to be 30 wt. %. Adding tetrahydrofuran as a volatile solvent into the polymer solution increased the membrane selectivity, which was attributed to delay L-L demixing induced by volatile solvent, elimination of the macro-void formation during demixing and selective loss of highly volatile solvent from the outermost surface of the membrane during polymer solution casting.

کلمات کلیدی:

flat sheet membrane, phase inversion, gas separation, additives

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