

عنوان مقاله:

Improving the mechanical and permeation properties of PES/PEO composite membranes for olefin recovery applications

محل انتشار:

دومین همایش علمی مهندسی فرآیند پالایش و پتروشیمی (سال: 1393)

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خلاصه مقاله:

Selective polymer membranes will be developed for olefins recovery from petrochemical by-product and vent streams. Their long term stability is the focus point of researchers in this area. In this research, incorporation of silver salts was conducted for stability evaluation of facilitated transport membrane in ethylene/ethane separation process. Silver tetrafluoroborate (AgBF_4) and new synthesized, silver(II) peroxydisulfate ($\text{Ag}(\text{bipy})_2\text{S}_2\text{O}_8$) have been applied in the preparation of composite membranes. The effect of preparation and analysis parameters were compared to each other. The reduction time of carrier agents in the case of $\text{Ag}(\text{bipy})_2\text{S}_2\text{O}_8$ salt postponed because of two positive charge of silver cations and oxidative properties of salt anions. The membranes containing $\text{Ag}(\text{bipy})_2\text{S}_2\text{O}_8$ salt possessed higher mechanical strength, higher permeation and selectivity durability. Lower lattice energy and spatial prevention of AgBF_4 salt caused to better distribution of its cations and counterions. The maximum ethylene selectivity after saturation step belonged to the membranes containing $\text{Ag}(\text{bipy})_2\text{S}_2\text{O}_8$ salt, which was 115 at 4 barg

کلمات کلیدی:

Olefin Recovery, Stability, Facilitated Transport, Membrane

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