

عنوان مقاله:

Theoretical screening of zeolites for membrane separation of propylene/propane mixtures

محل انتشار:

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خلاصه مقاله:

In this paper, the performances of potential zeolite membranes were estimated by the Maxwell-Stefan model and then they were placed in Robeson plot of propylene/propane separation. Additionally, the effects of feed pressure and the mole fraction of propylene in the feed on both the propylene permeabilities and membrane permselectivities were investigated. The results showed that zeolite membranes had better performances than carbon and polymer membranes. However, the performances of carbon membranes were better than those of zeolites 4A and ITQ-3. Also, among various zeolites studied, a DD3R zeolite membrane had the highest propylene permselectivity. According to the minimum requirement needed for membranes (i.e., a minimum selectivity of 35 and a permeability of 1 Barrer) for propylene/propane separation, it was found that the zeolite membranes of DD3R, SAPO-34, Si-CHA and ITQ-12 had this performance requirement. However, DD3R and SAPO-34 zeolite membranes were more preferred than the polymer, carbon and composite membranes due to their higher performances. Polyolefins J (2018) 5: 23-30

کلمات کلیدی:

Propylene; membrane; zeolite; Maxwell-Stefan model; gas separation

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