

عنوان مقاله:

Pervaporation separation of water/isopropanol mixtures with poly(vinyl alcohol) membranes crosslinked with fumaric acid :Effect of crosslinking time on the mechanical and separation properties

محل انتشار:

هفتمین کنگره ملی مهندسی شیمی (سال: 1390)

تعداد صفحات اصل مقاله: 8

نویسندگان:

Maryam Heydari - *Department of Chemical Engineering, Isfahan University of Technology, Iran*

Ahmad Moheb - *Department of Chemical Engineering, Isfahan University of Technology, Iran*

خلاصه مقاله:

Cross-linked Poly (vinyl alcohol) membranes were prepared by using fumaric acid as the crosslinking agent and the effects of cross-linking time on the mechanical properties and membrane performance in terms of flux and selectivity were investigated. The crosslinking time varied between 10min to 60min .The characteristics of the membranes were determined by Fourier transform infrared (FT-IR) and tensile tests. FT-IR results proved that by increasing the crosslinking time more ester groups were formed in the cross-linked membranes. Also, An initial increase was seen for yield stress of the membrane cross-linked for 10 minutes, but further increase in the cross-linking time caused a reduction in this parameter. The effect of feed temperature and concentration on pervaporation dehydration of water/isopropanol (IPA) were studied for all of the developed membranes. Poly(vinyl alcohol) membranes were crosslinked for 60 minutes showed the highest selectivity of 1492. The temperature dependency of flux was investigated by using Arrhenius relationship and activation energy calculated for total permeation flux (E_p), water flux (E_{pw}) and isopropanol (E_{pIPA}). The lower value of E_{pw} in comparison with E_{pIPA} indicates that the developed membranes have excellent dehydration performance.

کلمات کلیدی:

Cross-linking time; Poly (vinyl alcohol); Pervaporation; Mechanical property

لینک ثابت مقاله در پایگاه سیویلیکا:

<https://civilica.com/doc/340887>

