



Pervaporative separation of isopropyl alcohol/water mixtures: effects of the operation conditions

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ABSTRACT

Isopropyl alcohol/water mixture was separated by an environmentally friendly membrane process: pervaporation. Pervaporation experiments were carried out with a polymer blend membranes of poly(vinyl alcohol) (PVA) and poly(acrylic acid) (PAA) at different temperatures. PVA/PAA cross-linked membranes were prepared with different blend ratios. The influence of PVA/PAA ratio and of liquid mixture composition were investigated. The apparent activation energies were calculated at different temperatures. With increasing PAA content in the membranes fluxes decreased and selectivities increased. The flux increased with increasing operation temperature, as selectivity decreased. The studies showed that isopropylalcohol/water mixtures can be separated by pervaporation which is an energy efficient technology using the prepared membranes.

Keywords: Pervaporation; Isopropyl alcohol; Water; Poly(vinyl alcohol); Poly(acrylic acid); Apparent activation energy

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