Separation process using hydrophobic pervaporaiton membranes in the bioethanol production

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Attentions on the use of lignocellulosic biomass for biofuel production have increased because of future oil shortage, increasing oil prices and recent global warming. Biofuel (bioethanol, biobutanol) is one of the alternatives energy sources which could partially replace oil-derived fuels and decrease in air pollution and greenhouse gas emission. Recently, lignocellosic biomass is considered as attractive raw material for the bioethanol production because of its availability in large quantitities at low cost. Pervaporation is one of the most promising approaches for the recovery of alcohols from fermentation broths. It is simple, nontoxic to fermenting microorganisms, and potentially less energy consuming than distillation. Additionally, it can relieve the inhibition of cell growth caused by high ethanol concentrations. Pervaporation performance is strongly influenced by the membrane material as well as by process conditions such as feed concentration and temperature. The separation performance of polymeric pervaporation membranes depends on the separation parameters and on the flux because of selective interactions with the specific components of the feed mixture.