

High performance hollow fiber membrane contactor for the separation of isoprene/n-pentane mixtures

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Recently, membrane technology has been proposed as an alternative approach to the conventional distillation process. Membrane separation using facilitated transport membrane could be particularly an alternative in aspects of decreasing the costs and high olefin selectivity. There have been many reports on the facilitated transport of olefin by using supported liquid membranes, ion exchange membranes, or dense polymer membranes containing silver ions as carriers. The polymer-silver salts membranes using π -complexation were applied to separate isoprene component from C5 mixtures and observed to remarkable separation of isoprene from C5 mixtures. In this work, the composite membranes containing (SPEEK)-AgNO₃ showed good selectivity for isoprene over n-pentane and long-term stability. However they affected by the degree of sulfonation (DS) of SPEEK. The separation of isoprene from n-pentane mixtures was also carried out using hollow fiber membranes containing SPEEK layers on top of PAN supports in a liquid-liquid membrane contactor system. The SPEEK-coated hollow fiber membranes was also effective the separation of real C5 mixture.