

Gas permeation properties of the carbon membranes derived from the polymer blend of poly(phenylene oxide)(PPO) and a thermolabile polymer

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The selection of a polymeric precursor is one of the most important considerations since it can yield a series of membranes having micropores of desired molecular dimensions through the pyrolysis at a desired temperature. The carbon membranes derived PPO/PVP precursors were prepared using a polymer blend of the thermally stable and labile polymer in order to investigate influence of the PVP molecular weight on the gas permeation performance. The permeation results showed that the permeances especially for the gas species with larger molecular size increased due to increased membrane pore structure and the enhanced diffusional pathway for the gas transport through carbon membranes. It is considered that the addition of the thermally labile polymer can control the pore structure in the carbon membrane derived from the PPO/PVP with different PVP molecular weight.