Molecular Thermodynamic Model of Gas Permeability in Polymer Membranes

이도경, 이경주, 박정태, 김종학*
연세대학교 화학공학과
(jonghak@yonsei.ac.kr*)

A configurational entropy model for polymer properties has been originally developed by Gibbs et al. and adequately used to interpret the conductivity behavior of polymer electrolytes. In this study, we propose a simple, molecular thermodynamic model of gas permeability in polymer membranes on the basis of the configurational entropy model and Flory-Huggins theory to predict the permeation behavior as a function of gas concentration. The proposed configurational entropy model consists of three contributions; i.e., the disorientation entropy of polymer, the mixing entropy and specific interaction entropy of polymer/gas. We quantitatively present the gas permeability in polymer membranes dependent on the gas concentration.