RESEARCH PAPERS

PTFE多孔膜气体渗透数学模型和膜孔结构的影响

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摘要　Membrane-based separation processes are new technology combined membrane separation with
conven-tional separation. Hydrophobic porous membranes are often used in these processes.

The structure of hydrophobicporous membrane has significant effect on mass transfer process. The permeabilities of five kinds of gas, He, N2,O2, CO2 and water vapor, across six polytetrafiuoroethylene(PTFE) flat membranes were tested experimentally.Results indicated that the greater the membrane mean pore size and the wider the pore size distribution are, thehigher the gas permeability. A gas permeation model, including the effects of membrane structure parameter and gasproperties, was established. A comprehensive
characteristic parameter (including porosity, thickness and tortuosity)was found more effective to express the influence of membrane structure in gas permeation process. The predictedpermeation coefficients were in good agreement with experimental data.

关键词　porous membrane　gas permeability　mathematical model
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Mathematical Model of Gas Permeation Through PTFE Porous Membrane and the Effect of Membrane Pore Structure

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Key words   porous membrane; gas permeability; mathematical model

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