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Preparation, modification, and applications

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Progress and perspectives in PTFE membrane: Preparation, modification, and applications

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Abstract:

Porous poly(tetrafluoroethylene) (PTFE) membrane is chemically inert and has been used in various membrane-separation processes including membrane distillation, oil-water separation, and gas-solid separation. Up to now, plate sheet and hollow fiber have been the most common forms of PTFE membranes. PTFE membranes are mainly produced by various techniques including stretching, spinning, and pore-forming. To achieve improved performance for targeted application, various modification methods, such as wet chemical, plasma, irradiation, atomic-layer deposition and high-temperature melting are employed to enhance the properties of the PTFE membrane. In this review, we systematically analyse the recent developments in the PTFE membrane formation and modification techniques. The advantages and disadvantages of the preparation and modification methods and the characteristics of the PTFE products are discussed. We also provide our perspectives on the future research directions for the preparation, modification, and application of porous PTFE membrane.

Keywords: Porous PTFE membrane, fabrication, modification, surface property, application.

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