

Poly(ethylene oxide)-based gas separation composite membranes for carbon dioxide separation via UV/Ozone graft polymerization

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In this study, we prepared thin composite membranes in which a support layer and a selective layer are covalently bonded in a simple method. The graft polymerization was carried out using UV/Ozone on a commercial Poly(sulfone) (PSf) ultrafiltration membrane with Poly((ethylene glycol) methyl ether methacrylate) (PEGMA) possessing CO<sub>2</sub> affinity. As a result, nano-pores on the surface membrane were covered with PEGMA. The covalent bonding of the composite membranes has the advantage of improving stability and weatherability. In addition, due to the thin selective layer formed by the graft polymerization, highly gas permeation characteristics are exhibited, and efficient process performance can be expected. The final composite membranes were investigated in terms of their chemical structures and elements, morphology, and gas permeation properties.