

Fabrication of surface-attached gas separation membranes using UV/Ozone graft polymerization

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In this study, we made a thin composite membrane by covalently bonding a support layer and a selective layer. Polysulfone (PSf) ultrafiltration membranes were irradiated with UV/Ozone to form peroxide groups, and then graft polymerization was carried out at a constant temperature using poly (ethylene glycol) methyl ether methacrylate (PEGMA) having CO₂ affinity. As a result, nano-pores on the surface film were covered with PEGMA. Due to the thin selective layer formed by graft polymerization, gas permeability is increased and efficient process performance can be expected. And the covalent bonding of composite membranes has the advantage of improving stability and weatherability. The final composite membranes were investigated for chemical structures and elements, morphology and gas permeation properties.