

## Perfluoropolyether based Hydrophobic Membrane via Polymerization Induced Phase Separation (PIPS) for Continuous-flow Liquid-liquid Phase separator

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In membrane industry, excellent chemical inert membrane is necessary to be applied in wide range application of chemical process operation. Therefore, fabrication of fluoropolymer typed membrane through polymer phase separation technique such as thermally induced phase separation (TIPS), non-solvent induced phase separation (NIPS) and vapor induced phase separation (VIPS) has been developed recently. However, due to sensitive parameters (temperature or mass transfer) and usage of toxic solvent for membrane fabrication, reproducibility and large scale fabrication of membrane has been limited for a while. Here, we developed highly chemical resistant perfluoropolyether (PFPE) based hydrophobic membrane by one-pot and green fabrication process by polymerization induced phase separation (PIPS) in large scale. A pore size and overall porosity of PFPE membrane can be easily controlled by varying weight concentration of PFPE monomer and green solvent, 2-propanol (IPA). Furthermore, we applied PFPE based hydrophobic membrane to immiscible liquid-liquid phase separator for downstream of chemical process to obtain high purity of desired product and confirmed 100 % separation efficiency.