

## Biomethane Purification Using PVDF/Pebax 1657 Thin Film Composite Membrane

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**ABSTRACT:** *Biogas is an alternative energy from biomass. The gas can be produced from anaerobic digestion by microorganism. Biomasses such as animal manure, kitchen waste, garden waste, or even human excreta are among the major sources of biogas. Usually, biogas contains 60% methane along with 40% of carbon dioxide. Besides its important role in natural gas, methane also contributes to greenhouse gases. Their presence in atmosphere will thicken earth blanket and further lead to climate change. One pound of methane traps 25 times more heat in the atmosphere compared to one pound of carbon dioxide. This research introduced a new material, Pebax 1657 to improve the current polymeric based membranes in the form of thin film composite (TFC). Polyvinylidene fluoride (PVDF) was used as a porous support layer for this TFC and this combination surpassed the Robeson 2008 trade off limit with CO<sub>2</sub> pressure normalise flux and selectivity of 1075 Barrer and 52.50 respectively. Besides transforming the waste into wealth, the emission of this greenhouse gases can be reduced so that a green environment and clean air can be continually enjoyed by future generations.*

**Keywords:** PEBAX, PVDF, composite membrane, coating method, CO<sub>2</sub>/ CH<sub>4</sub> separation