

## **Fabrication of a High-Performance Polyetherimide Membrane for Helium Separation**

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**Abstract :** Helium market is continuously growing due to its essential uses in the electronic and healthcare sectors. Currently, helium is produced by cryogenic distillation but the process is uneconomical especially for low production volumes. On the other hand, polymeric membranes can provide a cost-effective solution for helium purification due to their low operating energy. However, the preparation of membranes involves the use of very toxic solvents such as chloroform. In this work, polyetherimide membranes were prepared using a less toxic solvent, n-methylpyrrolidone with a polymer-to-solvent ratio of 27 wt%. The developed membrane showed a superior helium permeability of 15.9 Barrer that surpassed the permeability of membranes made by chloroform.

**Keywords :** helium separation, polyetherimide, dense membrane, gas permeability

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