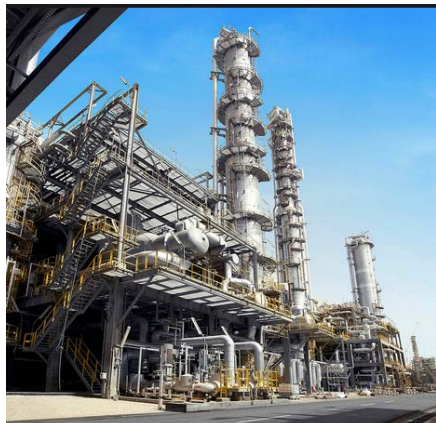


## Advanced, Cost Effective Propylene Separation Technology



Propylene/propane separation is one of the most important, challenging and energy-intensive processes in petrochemical industry. The separation is traditionally performed by a highly energy-intensive, and therefore expensive, distillation process. There exists a need for less expensive separation techniques.

### Description of the Invention

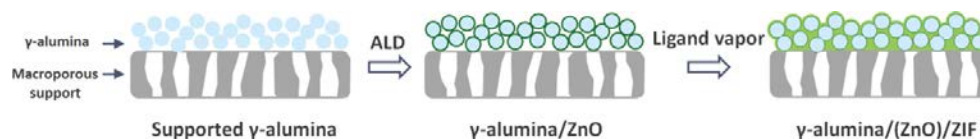
A new nanocomposite membrane shows excellent propylene/propane separation consists of propylene-selective coordination compounds uniquely embedded inside a mesoporous oxide matrix. The mesopores of the matrix are deposited with zinc oxide (ZnO) via atomic layer deposition technique (ALD), and the pores are plugged with a zeolitic imidazolate framework (ZIF) created by an expansive, reactive transformation of deposited zinc oxide to a zinc-imidazolate coordination compound. This first-of-its-kind nanocomposite membrane offers enhanced propylene separation performance and membrane stability, and at a lower cost than previous technology.

### Features and Benefits

- Novel nanocomposite membrane
- Improved membrane stability (mechanical and thermal)
- Enhanced separation performance
- Easy, reproducible fabrication method
- Scalable
- Technoeconomic analysis available
- Cost effective

### Potential Applications

- Propylene/propane separation
- Gas separation
- Separation membranes
- Chemical/petrochemical industry
- Propylene recovery (polypropylene plant)



### Technology Status

Prototype dev.

### Publications

None

### IP Status

Patent Pending

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### Case Reference

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