

TECH OFFER

Ultra-Wetting Graphene-Based Ultrafiltration Membrane



KEY INFORMATION

TECHNOLOGY CATEGORY:

Environment, Clean Air & Water - Filter Membrane & Absorption Material

TECHNOLOGY READINESS LEVEL (TRL): **TRL6**

COUNTRY: **SINGAPORE**

ID NUMBER: **TO174530**

OVERVIEW

In recent years, graphene has gained much attention in the field of membrane science and engineering due to its high surface area, mechanical strength and chemical stability. Theoretical analysis has also predicted that graphene-based membranes may exhibit 2-3 orders of magnitude higher permeability than the current state of the art membranes. However, experimental studies show that there are limitations in achieving such improved permeability due to the challenges associated with the fabrication of leak-free porous graphene membranes with very large surface area. The technology owner's patented ultra-wetting graphene-based membrane has been developed with a unique method that facilitates the easy scalability of this membrane. The membrane being hydrophilic can operate at very low pressure and thereby can help to reduce 20-50% of the overall energy consumption. Membranes are robust and resist fouling and thereby reduces the frequent cleaning requirement, chemical usage, and downtime. It can be used for all ultrafiltration applications such as pre-treatment to RO, potable water treatment, produced water treatment etc.

The technology owner is looking for industry partners (membrane manufacturers or system integrators with capabilities to scale-

up the membrane) who can bring this technology to market by licensing this technology.

TECHNOLOGY FEATURES & SPECIFICATIONS

- High permeable membrane
- Operates at lower pressure
- Resistant to fouling
- Chemically & mechanically stable
- Reduced Cleaning & downtime
- Reduced overall operating cost (~20%)

POTENTIAL APPLICATIONS

- Pre-treatment to RO
- Potable water filters
- Industrial water treatment
- F&B Process & separation
- Protein separation

The global market for Ultrafiltration Membranes estimated at US\$4 Billion in the year 2020, is projected to reach a revised size of US\$5.8 Billion by 2027, growing at a CAGR of 5.4% over the period 2020-2027.

UNIQUE VALUE PROPOSITION

- Reduced Cleaning & downtime
- Reduced overall operating cost (~20%)