

## Novel Solar Water Filter with Long Shelf-Life Using Graphene and Titanium Oxide

### TECHNOLOGY DESCRIPTION

This technology is about producing better water filters with incorporation of graphene and titanium oxide.

### TECHNOLOGY FEATURES

This technology is a value added water filter with a potential alternative to green water purification process. It can also be utilized in cosmetics, pharmaceuticals, food and beverages industries. It has longer shelf-life time compared to the current technology in the market. It reduces operation downtime and costs.

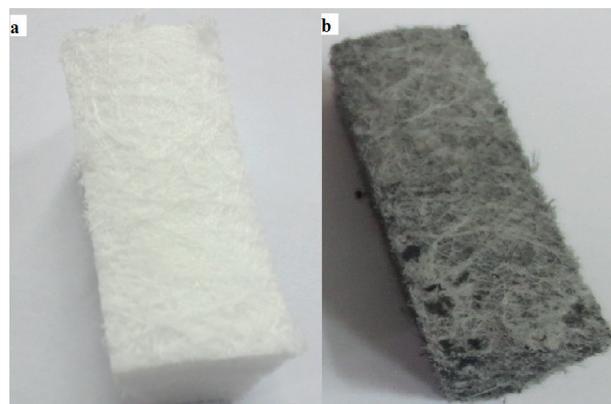
### ADVANTAGES

- Reduces operation downtime and costs
- Longer shelf-life

### INDUSTRY OVERVIEW

**Prospect: Household Population, Pharmaceutical Industry, Food and Beverage Industry**

Several current water purification systems employ chlorination for water disinfections because it is highly efficient and cost effective. Other filtration methods such as ultrafiltration, nanofiltration, microfiltration, and reverse osmosis are also used to remove proteins, gelatins, viruses, bacteria, and color pigments, which requires state-of-the-art technologies. Other disinfecting methods of microbiological impurities include the use of ultraviolet (UV) and ozone plants. In the past, the frequent replacement of the used filters to meet the high demands of pristine water increases the operation downtime and cost while the use of UV light is hazardous and expensive because of large input of electric power to generate radiation. Filtration and photo degradation under solar light is an appealing challenge for developing future generation of water purification system. Here, water filter is incorporated with graphene and TiO<sub>2</sub> creating a value-added water filter that is a potential alternative to green water purification process. The main target groups for the filter are those who travel or live in remote areas of the world, outdoor enthusiasts, and several organizations in industries such as the pharmaceutical, and food and beverage industries. As of now, there are 342 SMEs that operates in the Pharmaceutical industry. They are the potential buyers including , Food and Beverage industry. In addition, it is recorded that to date there are 7.6 million households in Malaysia with the average household size to be 4.1 persons.



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