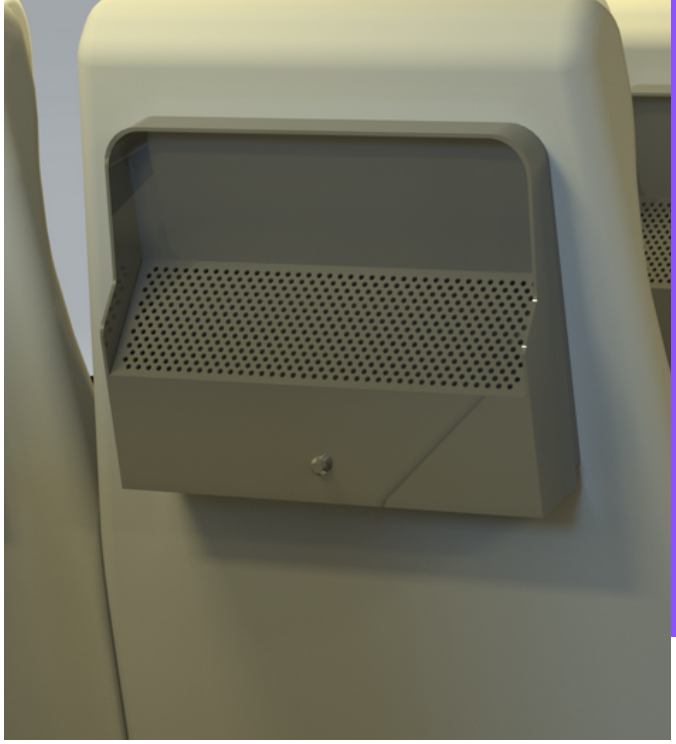
PLASMAGEAR

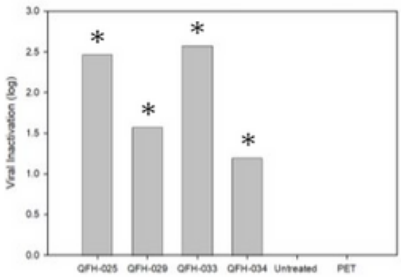
AIR PURIFIER SOLUTIONS

Efficient Portable Air Purifiers Developed By Surface Engineering of Nanospun Filters for Capture and Inactivation of Viral Particles

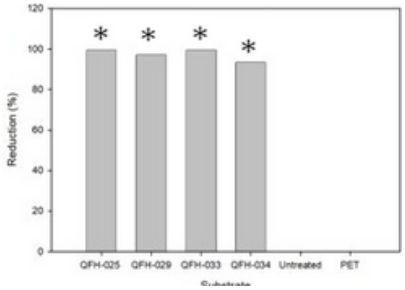


KEY TECHNOLOGY

Filtration membrane with the capacity to filter and inactivate viral particles is developed using a novel electrospinning process. PECVD based technology is then used to add hydrophobic/oleophobic properties to the membrane.



Average Viral Inactivation Compared to Control



Viral Percent Reduction Compared to Control

TEST RESULTS

- **Plasma Treatment of Nanofiber Membrane Filter**

The WCA was measured to be about 110 for untreated QFH-025 and QFH-029, while after plasma treatment p-103 and p-105 it was improved to be about 140.

- **Particle Filtration and Pressure Drop**

The filtration efficiency test was performed in general accordance with ISO 11155-1(2002) procedure. All the treated membrane samples achieved a PFE of over 99.99%.

- **Viral Filtration Efficiency**

The VFE testing of the air purifier filtration membrane was modeled after ASTM F2101 and done by Nelson Labs. 99.9% viral filtration efficiency was observed on nanofiber-based filters (without any surface modification).

- **Viral Inactivation**

Tests carried out using AATCC-100 protocol. Approximately 2.5 log reduction of viral load was observed on nanofiber based filter.

- **CFD Analysis**

CFD modeling was completed to evaluate and ensure that viral particles are to be effectively captured. The results indicate that up to 83% of viral particles will be captured in the first 225 seconds. The results also demonstrated that the swarm of air purifier units effectively reduced the transmission risk from coughing unmasked passengers to the adjacent passengers.

BENEFITS

- 99.9% filtration Efficiency
- Offered in two models: Seat Back and Ceiling air purifiers
- Compact and light weight
- Size customization
- Smart sensing and maintenance monitoring