



Name of the Technology: Six-stage bioaerosol air sampler and sampling probe for BFE testing of mask

Summary: A testing setup for bacterial filtration efficiency (BFE) of mask is developed. This setup includes a novel sampling probe and a six-stage bioaerosol sampler (having cutoff-size of 7.1, 4.7, 3.0, 2.1, 1.1, 0.65 micron at 28.3 litre/min flow rate) designs in accordance with the IS 9473:2002, IS 19289: 2014, EN 14683:2019, and ASTM F2101-19 standards. The setup comprises of particle generation system, mixing and mask holding probe, six-stage sampler, differential pressure gauge, dryers, flow meter followed by air pump, etc. accommodated in laminar hood. The developed six-stage bioaerosol sampler can be used for both, particle mass size distribution with chemical composition analysis and bioaerosol sampling. Cutoff size of each stage is validated using wind tunnel setup at NPL.

Applications: Ambient particle mass/chemical size distribution and bioaerosol sampling, mask testing

Novelty features: Design of the setup, single setup can be used for 4 parameters testing (particle filtration efficiency (PFE), bacterial filtration efficiency (BFE), differential pressure, and carbon dioxide accumulation) of face mask

Advantages: Simple design, single setup can be used for 4 parameters testing of face mask

Readiness level of the Technology:

Idea	Concept Definition	Proof of Concept	Prototype	Lab Validation	Technology Development	Technology Demonstration	Technology Integrated	Market Launch

IPR related details: Patent filed in India

Whether patent(s) has already been granted for this technology/process (Yes/No): No

Whether patent(s) has already been filed for this technology/process (Yes/No): Yes

If Yes, please provide the following details

Patent Application Title: A Mask Testing Setup

Country(s): India

Application Number(s) and Date(s):202111045226, 05.10.2021

Publication Date(s) (if applicable): 07.04.2023

Related Patents (if any): Nil

Year of Introduction of the technology/knowhow/process: 2020

User Industries: Air monitoring instrument manufactures, hospitals/testing laboratory and health related device manufacturers