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## **This Nano-coated Filter Provides Better Protection for COVID-19 Superheroes**

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Researchers at the Indian Institute of Technology Madras have designed a new nylon-based nano-coated filter media that enhances the particle filtration efficiency of face masks, respirator devices, air purification systems, aircraft cabins, armoured vehicle engines, computer hard disk drive filters, and pneumatic equipment. The filter media, which is currently being field-tested, can greatly protect frontline workers during the coronavirus pandemic.

Researchers in the Indian Institute of Technology Madras ([IIT-M](#)) have developed a filter that can be used to protect healthcare workers treating COVID-19 patients. The nylon-based nano-coated filter uses polymer coating on cellulose paper and was developed using electro-spinning process.

The coating properties are optimised to efficiently remove sub-micron sized dust particles in the air. The filter media is currently being field-tested and once validated through field trials it will be recommended for bulk manufacturing, the researchers have said.

The project is being funded by the Defence Research Development Organisation for its application in defence. But the current epidemic had led to it being repositioned in health care applications.

K. Arul Prakash, Department of Applied Mechanics, said: "The nano-coating fabricated through the electro-spinning process has fiber diameter less than one micron and can be positioned according to the need to enhance surface/depth filtration for healthcare workers or public responders. This novel filter with multiple nano-coating can filter particles of the order of one micron size."

This project is a collaborative effort with faculty from various departments of IIT-Madras, including Raghuram Chetty from Department of Chemical Engineering and Saravana Kumar from Department of Engineering Design.

Mr. Arul Prakash added, “Nano-coated filter media have much better reverse cleanability behaviour resulting in an extended service life period of air filters, providing prolonged working hours for armoured vehicles. This will save cost for defence applications where the filters are currently imported from developed countries.”

The nano-coated filter media could improve the particle filtration efficiency of face masks, respirator devices, air purification system in operation theatres, aircraft cabins, armoured vehicle engines, computer hard disk drive filters and pneumatic equipment.

At present the researchers are trying to optimise the coating parameters of the nano materials for bulk manufacturing at an affordable cost and testing antiviral properties.

Efforts are also being made to develop composite nano-coated filter media having more than one nano material coating to manufacture multi-layered masks.

Read the [original article](#) on The Hindu.