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New Solutions to Face Mask Shortages

With the deficit in vital mask supplies rapidly increasing amid the COVID-19 pandemic, researchers around the world are developing alternative solutions.

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Self-Sanitising Mask

A research team at Northwestern University led by Jiaxing Huang, a professor of materials science in McCormick School of Engineering, is working on a new self-sanitising medical face mask that deactivates viruses on contact. The project has received a rapid response research (RAPID) grant from the U.S. National Science Foundation (#2026944) after the organisation had invited proposals to address the spread of the novel coronavirus.

Unlike with existing masks, which provide only a physical barrier to the respiratory droplets, the new project, *'On-mask chemical modulation of respiratory droplets,'* will focus on utilisation of antiviral chemicals for masks to self-sanitise the passing droplets. The researchers' aim is to find a solution that would be compatible with existing types of masks adding the function of virus deactivation. Thus, the level of viruses in the droplets exhaled by infected wearers would be decreased.

Reusable Nanofiber Masks

Another solution has been designed at the Korea Advanced Institute of Science and Technology (KAIST). It is a recyclable nanofiber filter that can fit inside standard surgical masks. Such filters made of extremely thin, fibrous material are widely used in air filtration systems. The new design, which can be woven into the interior of personal protective gear, minimises the amount of dirt and other pathogens in comparison to common disposable masks and filters out viruses. Its major advantage is that the mask can maintain its original shape and filtering function even after being washed more than 20 times.

Professor Il-Doo Kim who led the study, has officially filed this design with Korea's Ministry of Food and Drug Safety. Kim's research institute is producing 1,500 filters a day while awaiting for the approval.

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