

Masks that kill viruses? Meet the next generation of face coverings

In the near future, if you're on a plane and the person next to you sneezes, you could be wearing a mask that sterilizes the air before you breathe it in.

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Current masks function as barriers to virus particles. Michael Strano, a professor of chemical engineering at MIT, is developing a mask designed to actually kill virus. "Filtering has its place, but so does just destroying the virus," says Prof. [Michael] Strano.

The mask design incorporates a copper mesh heated to about 160 degrees that traps and deactivates the virus. Neoprene insulation and a thermoelectric cooler will ensure the inhaled air is comfortable to breathe. "You actually breathe medically sterile air," says Prof. Strano.

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[Another] mask from U.K.-based Medi-Immune Ltd. takes a different approach to killing virus. It uses UVC light to sterilize air that is drawn into a small chamber that can be worn on a belt or in a backpack. A hose from the chamber goes to the mask, and a fan maintains positive pressure in the mask to ensure any possible leakage is outward. Exhaled air passes through filters on the sides of the mask.

In animal tests performed by Public Health England in 2017, the mask was as effective as a vaccine in preventing influenza, says [researcher] Nigel Silman.

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