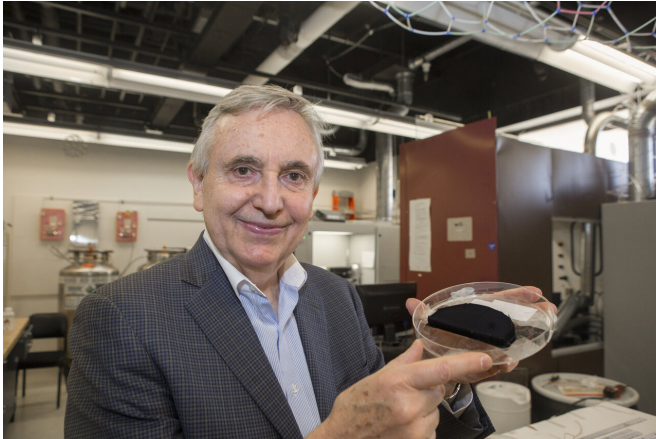


Researchers aim to make heatable, reusable face mask

29 May 2020



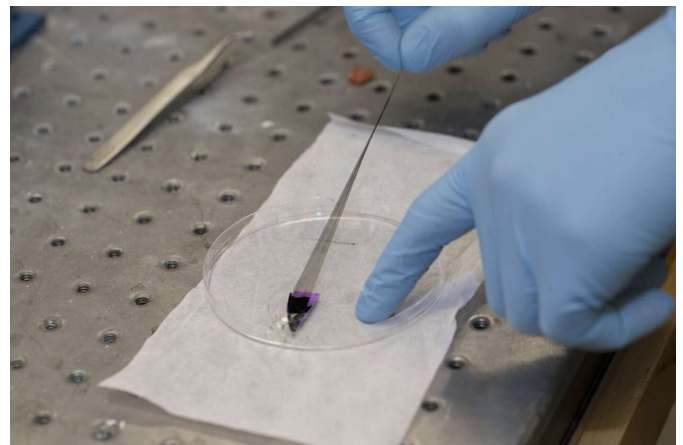
University of Cincinnati engineering professor Vesselin Shanov displays carbon nanotubes he created in his lab. Credit: Joseph Fuqua II/UC Creative + Brand

Two researchers at the University of Cincinnati College of Engineering and Applied Science have been granted funding from the National Science Foundation for a project with the goal of creating a heatable and reusable face mask for medical workers and others.

"Currently, there is a significant shortage of personal protective equipment, particularly [face masks](#), due to the COVID-19 pandemic in the United States. Statistics show that one COVID-19 patient consumes on average 17 face masks per day worn by medical personnel," said the principal investigators of the study, Vesselin Shanov, professor of chemical engineering, and Soryong "Ryan" Chae, assistant professor of environmental engineering.

With [face masks](#) in high demand—and an expectation that the widespread need for masks will continue as the virus persists—Shanov and Chae saw an opportunity to make an impact.

The research team is working on a design and prototype of the face mask that could kill viruses caught on the mask surface. The team plans to use thin, breathable film constructed of engineered carbon nanomaterials as a heatable filter that can be retrofitted onto the outer surface of a commercial face mask to prevent buildup of infectious pathogens. This heatable filter will be powered by a portable battery or a cell phone and is thermally insulated from facial skin. The mask can be energized when worn by the user or in storage to disinfect it.



Engineers at the University of Cincinnati create carbon-nanotube fiber that can be woven into a textile. Credit: Joseph Fuqua II/UC Creative + Brand

Faculty members and students with a variety of backgrounds will be involved in the project, which is just getting underway. Yanbo Fang, a doctoral student in [materials science](#), and Hung Nguyen, an undergraduate chemical engineering student, have been instrumental in the creation of an initial prototype that will be optimized and tested for breathability and virus inactivation.

Preliminary data resulted from previous research

support from University of Cincinnati, Ohio Water Resources Center and NSF.

Provided by University of Cincinnati

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