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Japan develops photocatalyst for antiviral coating against COVID-19

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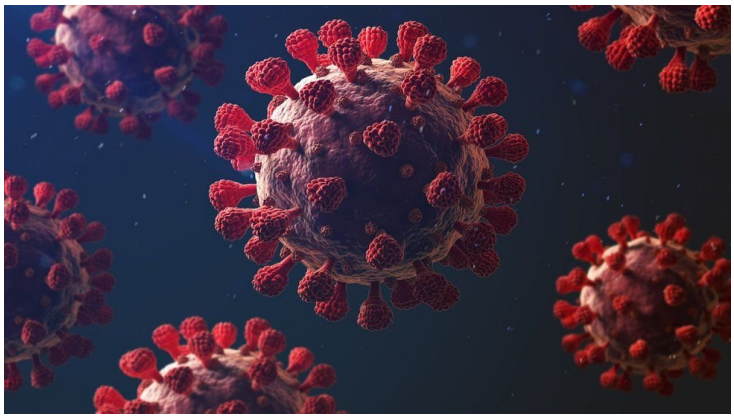
Proven to be effective under both darkness and indoor light



The novel coronavirus (SARS-CoV-2), responsible for the ongoing COVID-19 pandemic, has affected millions of people worldwide. The main transmission pathway of the virus is through droplets released by infected people into the air. Additionally, these droplets exist on various surfaces as well. Viral infections mainly occur in indoor environments where many people gather, Antiviral chemicals, such as alcohol and hydrogen peroxide, are often used to decontaminate regularly touched surfaces. These chemicals essentially render the virus inactive by breaking down their proteins. However, these chemicals are volatile in nature and, therefore evaporate away. As a result, the disinfection process has to be carried out regularly.

Now in a study published in *Scientific Reports*, a research team of Nara Medical University, Kanagawa Institute of Industrial Science and Technology, and Tokyo Institute of Technology in Japan has developed a solid-state photocatalyst as an alternative defense against the virus. Unlike chemical disinfectants, solid-state coatings remain for a long time, and since the viral outbreak, have been the subject of intensive research around the world. Solid-state antiviral coatings have the advantage of being non-toxic, abundant, and chemically and thermally stable.

To get the coating to work under visible light as well dark conditions, the team has developed a composite consisting of titanium dioxide (TiO_2) and copper oxide (Cu_xO) nanoclusters. By coating the Cu_xO/TiO_2 powder on a glass, the team showed that it could inactivate even the highly virulent Delta variant of SARS-CoV-2. The team has also confirmed the inactivation of Alfa, Beta, and Gamma variants by Cu_xO/TiO_2 in addition to the wild type strain.