

C-Polar Technology

March 11, 2021

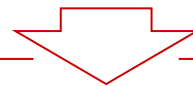
Masks serve as the first line of defense against COVID-19; however, their effectiveness is often lacking

Masks only have a 75% protection rate against the COVID-19 virus

- A study conducted by the University of Hong Kong showed that hamsters who were protected by a surgical mask partition still had a 25% chance of being infected by the COVID-19 virus.

Consequently, frontline healthcare workers have suffered disproportionately, despite their PPE

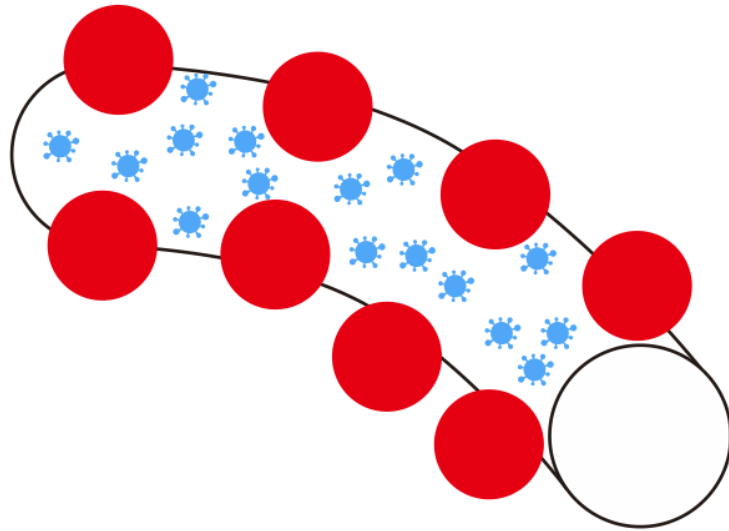
- Frontline healthcare workers, who are typically equipped with the highest grade of masks and PPE, experience high levels of infection.
- In November 2020, *The International Journal of Infectious Diseases* found that approximately 300,000 healthcare workers from 37 countries had been infected with COVID-19.
- The CDC estimates that more than 415,000 healthcare personnel in the United States had been infected, with close to 1,400 dying from the disease





There is a need for an effective and affordable solution that can isolate and kill the COVID-19 virus

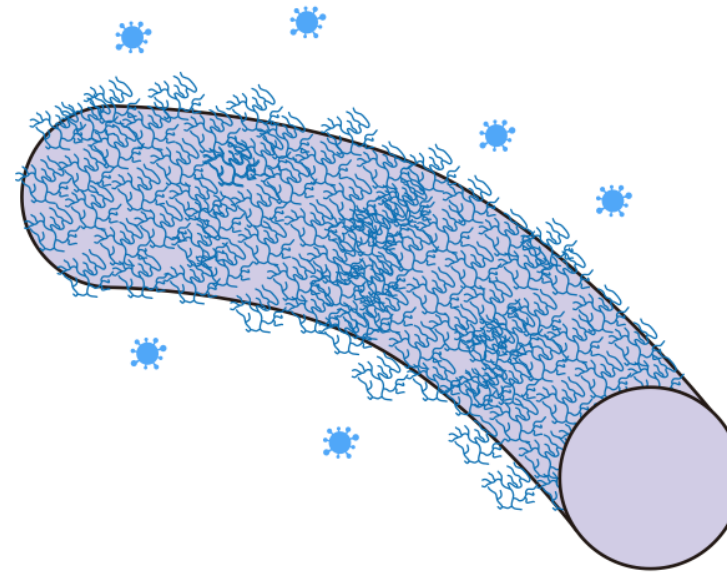
Our company has developed a polymer to “capture and kill” COVID-19 with 99.98% effectiveness



Traditional mask



-  Heavy Toxic Ingredients
-  COVID survive in the gap between active ingredients

Curie polymer



-  Curie Polymer (Evenly and Durably Bonded on Surface)
-  COVID is difficult to hide

We take advantage of the COVID-19 virus' negatively charged structure


Negatively charged residues in the endodomain are critical for specific assembly of spike protein into murine coronavirus

[Qianqian Yao](#),^a [Paul S. Masters](#),^b and [Rong Ye](#)^{a,*}

▶ [Author information](#) ▶ [Article notes](#) ▶ [Copyright and License information](#) [Disclaimer](#)

This article has been [cited by](#) other articles in PMC.

Abstract

Go to: 

Coronavirus spike (S) protein assembles into virions via its carboxy-terminus, which is composed of a transmembrane domain and an endodomain. Here, the carboxy-terminal charge-rich motif in the endodomain was verified to be critical for the specificity of S assembly into mouse hepatitis virus (MHV). Recombinant MHVs exhibited a range of abilities to accommodate the homologous S endodomains from the betacoronaviruses bovine coronavirus and human SARS-associated coronavirus, the alphacoronavirus porcine transmissible gastroenteritis virus (TGEV), and the gammacoronavirus avian infectious bronchitis virus respectively. Interestingly, in TGEV endodomain chimeras the reverting mutations resulted in stronger S incorporation into virions, and a net gain of negatively charged residues in the charge-rich motif accounted for the improvement. Additionally, MHV S assembly could also be rescued by the acidic carboxy-terminal domain of the nucleocapsid protein. These results indicate an important role for negatively charged endodomain residues in the incorporation of MHV S protein into assembled virions.

... And use a positively charged polymer to capture and kill the COVID-19 virus

① Strong positive charged polymer attract negative charged protein based biohazard like COVID-19

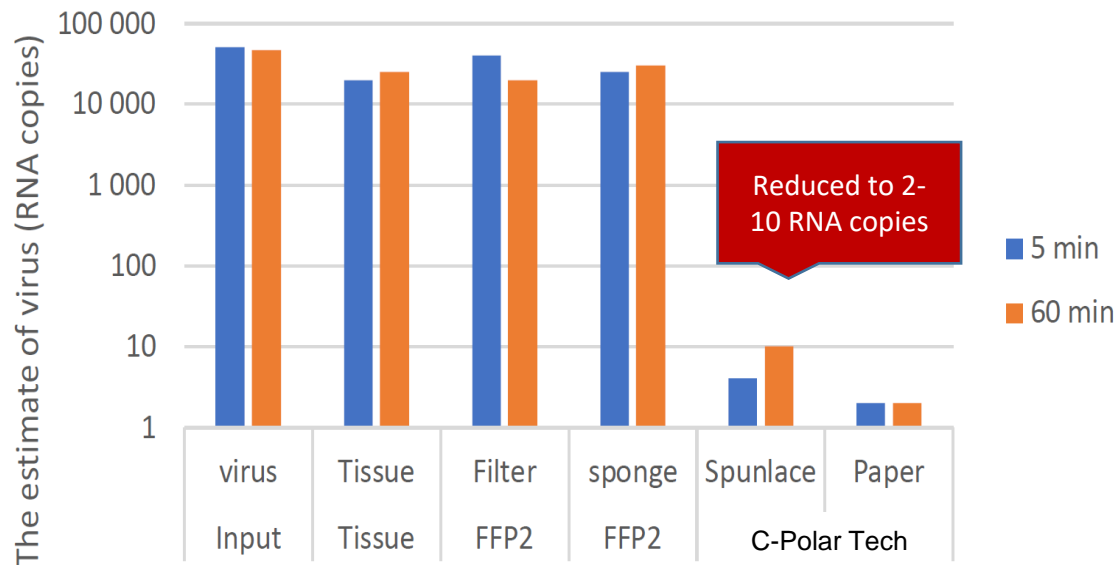
② Polymer arrest biohazard like COVID-19

③ Polymer tear off envelope of biohazard like COVID-19

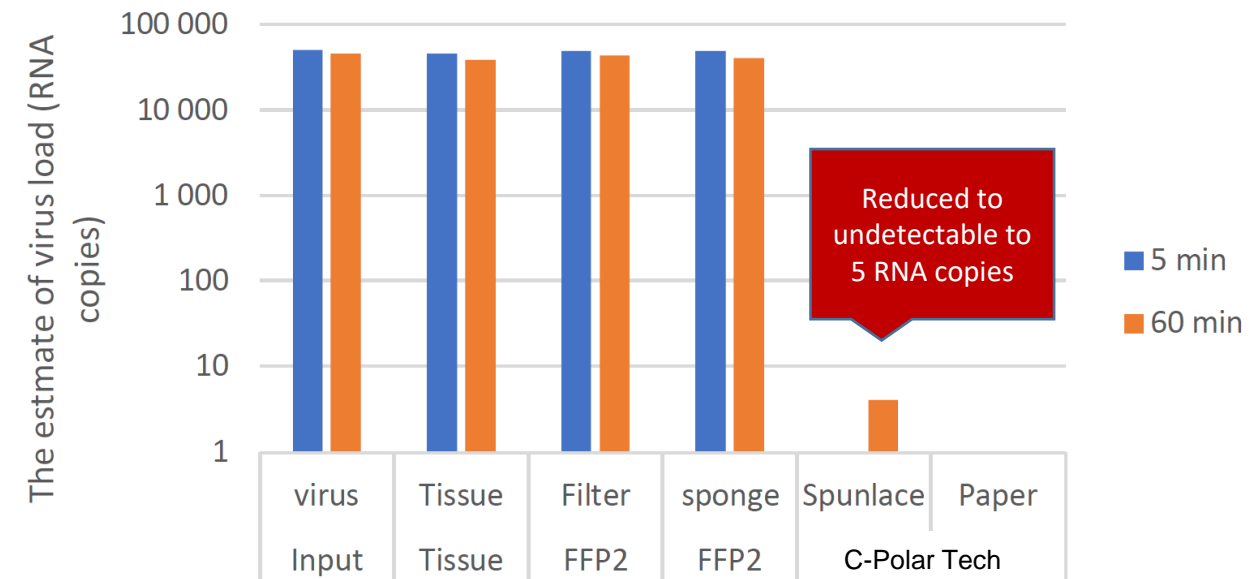


A study conducted by Finland Tampere University proved that C-Polar Technology significantly reduced COVID-19 virus substitutes*

C-Polar Technology significantly reduced SARS-229E RNA copies compared to controls (tissue, FFP2 filter, FFP2 sponge)



C-Polar Technology significantly reduced Coxsackievirus-B6 RNA copies compared to controls (tissue, FFP2 filter, FFP2 sponge)



* Both SARS-229E and Coxsackievirus-B6 are accepted substitutes for the SARS-CoV-2 virus
Source: Finland Tampere University, 2021

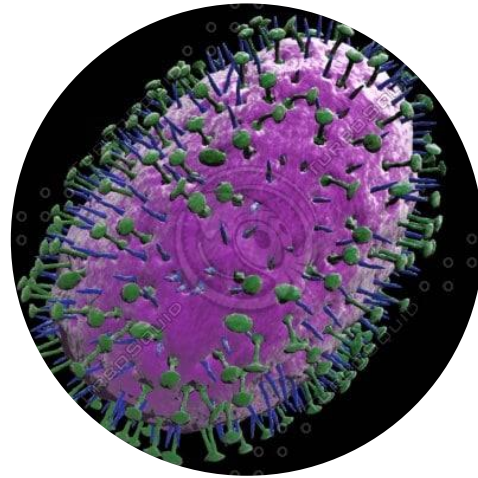
Conclusion from Finland Study

- Have a clear ability to
 - **Arrest** and **Inhibit** coronavirus and enterovirus with a **99.9%** ratio
 - 99.9% reduction after short incubation time (**5 mins**)
 - **Rapid effect** on the viruses
 - **No Cytotoxicity** to **human lung cells** for mask applications and other external applications
- Enterovirus and coronavirus are structurally different
 - Highly likely to **achieve similar results** with **other viruses** as well
- A **promising substance** for masks and other applications that aim at **preventing virus spread**

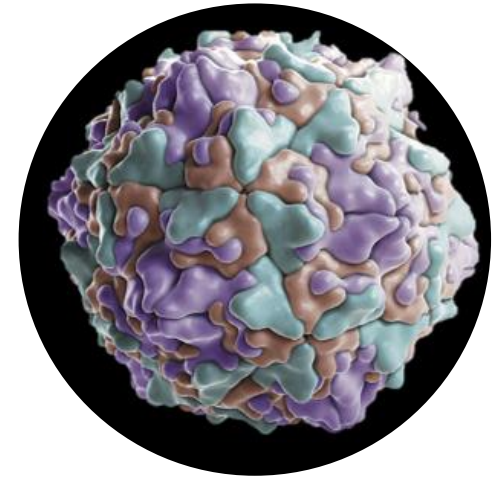
This study demonstrate that C-Polar Technology exhibits capture and kill against many forms of virus



SARS-CoV-2 / SARS-229E
(Spike Protein + Envelope)




























H3N2
(Pleomorphic Envelope)



Coxsackievirus-B6
(Non-Enveloped, Icosahedral
Capsid)

C-Polar technology compares favorably against potential competitor products across several key dimensions

	Our product		Potential competitors			
	C-Polar	Disinfectant on meltblown mask	I3 Biomedical	Zen Graphene	Pharm2Farm	
How does it work?	Uses a strong positively charged polymer to capture and kill negatively charged COVID virus	Kills virus on a normal mask's outer surface by applying a disinfectant spray	Kills virus using the cytotoxicity of iodine	Kills virus using the cytotoxicity of graphene	Kills virus using the cytotoxicity of copper	
Does it capture the virus in fast air flow?	 Research showed that C-Polar was able to capture more than 99.9% of the virus and bacteria in fast air flow	 Applying disinfectant on a mask does not result in the mask capturing the virus	 Iodine does not generate extra attractive force towards the virus	 Graphene does not generate extra attractive force towards the virus	 Copper does not generate extra attractive force towards the virus	
Does it kill 99.9% of the virus in a short time frame?	 Research showed that C-Polar was able to kill 99.9% of the virus and bacteria in a short time frame	 Water in disinfectant discharges electrostatic force, reducing filtration efficiency of the mask. Disinfectant disappears after 5 minutes due to volatility	 Deactivates 99% -- but not 99.9% -- of the virus within minutes	 Research showed it was able to kill 99% of the virus in 35 days	 Research showed that it was able to kill 90% of the virus in 7 hours	
Is it non-toxic?	 Our polymer is created using a WHO-approved food additive, and is safe for human exposure	 Continual and frequent exposure to disinfectant damages the user's lung tissue	 No toxic effects on humans	 Graphene has toxic effects on humans	 Copper contains nanoparticles that have heavy toxicity against the human body	
Is it non-metallic?	 C-Polar does not contain metals (e.g. toxic metals like zinc, copper, or titanium)	 Disinfectant is made of isopropyl alcohol. It does not contain metals	 Does not contain metals	 Graphene is a metal	 Copper is a heavy metal	
Is it bio-degradable?	 The C-polar polymer is 100% biodegradable and causes no environmental damage	 Applying disinfectant on a meltblown mask does not result in biodegradability	 I3 Biomedical masks are not biodegradable and take centuries to degrade in landfills	 Zen Graphene masks are not biodegradable, and take centuries to degrade in landfills	 Copper is not biodegradable and results in soil pollution	