

IIT Kanpur researchers to design a cost-effective virucidal coating of surgical masks for preventive measures against COVID-19

Science and Engineering Research Board (SERB), a statutory body under Department of Science and Technology, is supporting a research by a team of scientists from IIT Kanpur for developing a protective coating that would greatly help in making medicated masks and medical wear (PPE) for fighting COVID-19.

The team would be developing the coating using a combination of common polymers containing anti-microbial properties and re-purposable anti-viral molecules and materials used would make it a cost effective solution. Doctors and nurses, treating COVID-19 patients and hence susceptible to contamination due to their nature of work, will immensely benefit from this as it would add a layer of security for them while treating COVID-19 patients. Cost-effectiveness of the project would also help in mass-scale production.

The researchers from the Department of Chemistry in IIT Kanpur will be designing the virucidal coating using polymers which can resist attachment of bacteria and virus. An additional protection will be included to the polymer coating using molecules that can either destabilize and/or neutralize corona viruses and other viruses like influenza. The combination of anti-microbial polymer coating and functionalized drugs is also expected to provide a synergistic antiviral effect.

"While the most used varieties of masks work by filtration and retention of pathogens and aerosols based on their size, immobilizing anti-microbial and anti-viral ingredients on the fabric can be useful in critical environments, and for extending the life, re-usability and safer handling and disposal of masks. This additional defense will be especially valuable if it can be added at a fraction of the cost of the mask", said Professor Ashutosh Sharma, Secretary, Department of Science & Technology.

The researchers in the team include, Prof. M.L.N.Rao, Professor, Department of Chemistry, Indian Institute of Technology, Kanpur, Dr Ashis K Patra, Associate Professor, Department of Chemistry, Indian Institute of Technology, Kanpur and Dr Nagma Parveen, Assistant Professor, Department of Chemistry, Indian Institute of Technology, Kanpur. The team aims to establish a basic prototype within 3 months and further, collaborate with potential industrial and/or start-up partners for its potential large-scale applications.

The team will apply the proposed combination of polymer and repurposed drugs for coating standard healthcare utilities such as surgical masks, medical wear which can help in making medicated masks and medical wear (PPE). This system is expected to greatly help as preventive measures against infection caused by corona viruses and other flu viruses like influenza in healthcare settings where doctors and nurses are susceptible to contamination in treating infected patients. The cost-effectiveness of the design by using common polymers, repurposable anti-viral/virucidal drugs, and agents may also allow the cost-effective mass scale production of the medicated masks for the larger utilization in hospitals and for general use.

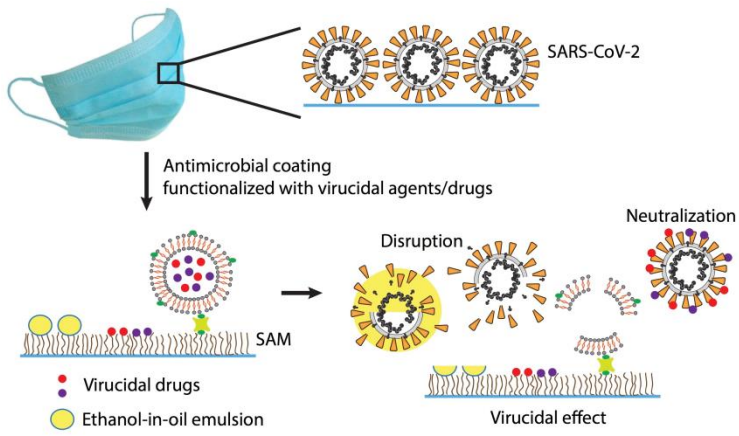


Figure 1. Scheme of virucidal coating of surgical masks for resisting attachment of virions and inactivation of any adhered virions.

For further details, contact **Dr. Nagma Parveen (PI)**, nagma@iitk.ac.in, Mob: 9474024181.