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IIT-D to upscale antiviral nano-coatings for masks

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For making triple layer medical masks & N-95 respirator receives support to combat COVID-19



As part of Nano Mission programme, the Department of Science and Technology (DST) has approved support for upscaling an antiviral nano-coatings developed by Professor Ashwini Kumar Agrawal of Indian Institute of Technology (IIT), Delhi for use as appropriate material for producing anti-COVID-19 Triple Layer Medical masks and N-95 respirator in large quantities.

Silver is known to have strong antimicrobial activity against bacteria, viruses, fungus, and so on. Professor Agrawal developed N9 blue nanosilver at SMITA Research Lab, IIT Delhi, under the nanomission project, and will be carrying out the upscaling work in association with two industrial partners Resil Chemicals Pvt Ltd. Bangalore and Nanoclean Global Pvt Ltd., New Delhi.

Resil chemicals will provide N9 blue nanosilver. Nanoclean Global will provide face masks and PPE materials for the application of nanocoating and will help in the design and fabrication of samples at their facilities.

"DST has initiated and nurtured nanoscience activities in the country in the last two decades producing quality human resources, infrastructure and knowledge in this globally competitive area. Today India stands 3rd globally in the number of scientific publications in nanosciences. The use of highly effective antimicrobial nanoparticles on PPEs, masks etc is a useful application that will provide an extra layer of protection for the high risk settings, such as for the medical workers", said Professor Ashutosh Sharma, Secretary, DST.

Prof Agrawal, along with his team, proposes to evaluate antiviral properties of this compound against COVID-19 in association with AIIMS, New Delhi, and ILBS, New Delhi. The N9 blue nanosilver, which is a highly potent antimicrobial agent, will be further modified to form nanocomplexes with Zinc compounds to achieve a synergistic effect. Subsequently, these nanomaterials will be applied as coatings on facemasks and other PPEs to improve their ability to protect the wearer from accidental contamination from COVID-19 virus droplets. The researchers will evaluate the shelf life of the coatings and their efficacy with different storage conditions such as temperature, humidity, and time and prepare facemasks and PPEs and provide these for field trials.