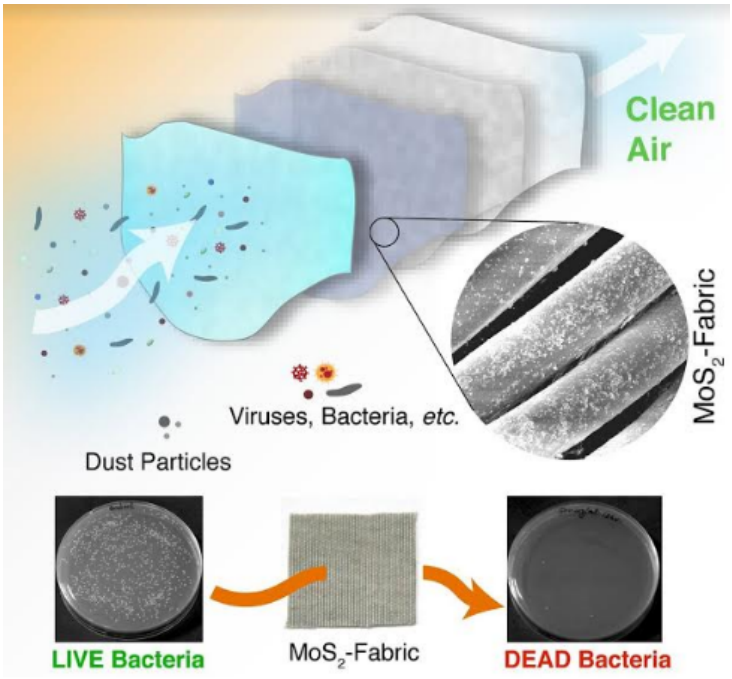
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IIT Mandi develops anti-bacterial material for face masks & PPE equipment

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The developed nanomaterial can clean the mask by simply keeping it in bright sunlight and make it ready to wear again



Indian Institute of Technology (IIT) Mandi researchers have developed a virus-filtering, self-cleaning and antibacterial material that can be used to make face masks and other PPE equipment.

This path breaking development of Dr. Amit Jaiswal, Assistant Professor, School of Basic Sciences, IIT Mandi comes at a time in which it has become imperative to develop techniques to stop the second wave of the COVID-19 pandemic in the country.

Dr. Jaiswal and his team has incorporated nanometre sized sheets of molybdenum sulphide, MoS2, the sharp edges, and corners of which act as tiny knives that pierce bacterial and viral membranes, thus killing them. “The ‘nanoknife’-modified fabrics demonstrated excellent antibacterial activity even after 60 cycles of washing,” said the lead researcher, which makes this an excellent way to reuse masks and reduce biological waste generation.

The researchers have developed prototypes of a 4-layered face mask using the MoS2 modified fabric. They report that these masks, in addition to killing microbes and being light-cleanable, can also filter >96 per cent of particles that are in the size range of the COVID Virus (120 nanometres), without compromising on the breathability of the fabric, and could thus be a powerful tool to prevent the spread of coronavirus and other microbial infections.

“We expect that the impact of this innovation on society will be immense and immediate, considering the current situation of global COVID-19 pandemic,” said Dr. Jaiswal. The proposed materials can also be used to fabricate screens/sheets for creation of makeshift isolation wards, containment cells and quarantines for holding individuals who come in contact with pathogens.