Title: A UV-light Sterilization System to treat N95 Filtering Face-mask Respirators for reuse

Funding Agency: IIT Jodhpur

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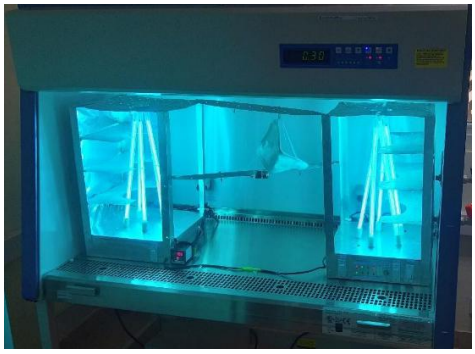
Brief description:

COVID-19 virus has spread rapidly throughout the world bringing an epidemic-like situation. Given the lack of an efficacious vaccine and also dangerous shortage of personal protective equipment, the global population has been hit hard by the current coronavirus outbreak. The most common respiratory protection device used in healthcare settings is the disposable N95 filtering face-piece respirator (FFR). However, infection control procedures typically call for disposable FFRs to be discarded after a single use to avoid cross-contamination. This means that a pandemic of a disease such as COVID-19, SARS CoV, Influenza would require a huge number of FFRs to protect healthcare workers from airborne transmissions. One possible way to meet the need for FFRs during a pandemic would be to reuse them and even a small number of reuses would greatly expand the available pool of disposable respirators. In this project, we proposed to develop and optimize a prototype sterilizing system made up of 254 nm UV-lamps and Class II biological safety cabinet for effective disinfection of disposable respirators in a protective environment.

Schematics or Pictures:



Outcome: Developed an advanced photocatalytic oxidation sterilization system based on UV-light and metal oxide nanoparticles catalyst panels for disinfecting medical assesories. The current system facilitates the reuse of N95 Filtering Face-mask Respirators. The system has been tested at AIIMS, Jodhpur for its effectiveness. The developed technology is being transferred to a number of industries across India for its mass manufacturing.

Publication if any: Technology Know-how document approved on 3rd May, 2020.