

## UV DISINFECTING SYSTEM TO FACILITATE N95 RESPIRATOR RE-USE

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**Category(s):**

Technology Classifications > Infectious Disease

**Description:**

SUMMARY

- Currently there are several solutions under consideration for disinfecting N95 respirators for re-use, with UV-C as the preferred solution because of ease of deployment and widespread applicability. Problematically, present UV-C disinfection solutions are limited by shadowing, which prevents exposure of the masks to the required effective dose of UV irradiation.
- The inventors utilized UV-C light field modeling and extensive test measurements to develop a proprietary arrangement of lamps for disinfecting. The configuration eliminates shadowing, allowing for full irradiation and disinfecting of the contaminated N95 respirator surface in the shortest amount of time.
- The invention is an N95 respirator decontamination cabinet, segmented into contaminated and decontaminated compartments. Masks are fixed to a removable cassette that travels through the system on a trolley. After one minute, and upon exiting the cabinet, the masks and cassette are fully disinfected.
- The inventors prepared a non-automated prototype that has an optimal decontamination rate of 180 masks per hour. Scaled-up and automated variants are estimated to be able to process up to 1440 masks per hour or more than 34,000 masks per day.

FIGURE



Prototype of the mask decontamination system showing UV source with proprietary bulb configuration (bottom) and rack for optimal positioning of masks within the cabinet (top).

ADVANTAGES

- Allows for re-use of N95 respirators, relieving supply chain shortages
- UV irradiation optimized for full mask coverage
- Optimized for shortest decontamination time

- Higher throughput than current solutions
- Apparatus is made of inexpensive and readily available parts
- Modular design allows for easy scale-up

#### DEVELOPMENT STAGE

- Prototype constructed
- Proof of concept testing at University of Chicago Medical Center
- Modular design, further scale up planned

#### INTELLECTUAL PROPERTY

- Patent Pending

#### DESIRED PARTNERSHIP

- Licensing
- Co-development
- Strategic advising and assistance

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