

Durable, Washable, and Reusable Antibacterial/Antiviral Cotton Fabrics

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ABSTRACT

Researchers at the University of California, Davis have developed a durable and reusable cotton fabric that is antibacterial/antiviral, and has medical, first-responder, and other potential safety and public health applications.

FULL DESCRIPTION

The recent attention on infectious disease transmissions – accentuated by the COVID-19 pandemic – has heightened concerns globally over potential cross-contamination and transmission of diseases associated with both personal hygiene and protective equipment (PPE). All current PPE are only barriers of infectious diseases, and surface blocked viruses and bacteria are still infectious and cause transmission and infection. Reusable and washable PPEs are welcome such as cotton face masks and protective clothing. However, disinfection of used PPEs is costly and should be done at a professional level. The magnitude of the COVID-19 pandemic has reinforced the limitations of this approach at scale. In addition, the increased prevalence of antibiotic resistance microorganisms has raised additional risks to patients and healthcare professionals as they provide critical services. New approaches are needed to produce low-cost and reusable fabrics that possess antibacterial properties.

Researchers at the University of California, Davis have developed an antimicrobial, durable and reusable cotton fabric using a technique to chemically incorporate photosensitizers on surfaces of treated cotton fabrics. The fabric could impart rapid and reusable antibacterial and antiviral functionality under daylight exposure conditions. The biocidal properties of this photo-induced, functional, material were demonstrated by its efficacy against both bacteria (E coli and L. innucua) and bacreiaphage T7 (an envelope virus). Moreover, the functions on the fabric exhibit excellent washing durability and photostability – properties ideal for uses ranging from reusable face masks and protective suits to a variety of medical and other applications. This technology is easy to be scaled up for mass production of the fabric at industrial scale.

APPLICATIONS

- ▶ Personal protective equipment such as reusable cotton cloth face masks and suits
- ▶ Clothing and other applications critical to individuals at elevated risks of microbial infections

FEATURES/BENEFITS

- ▶ Low-cost production process that can be scaled to industrial volumes
- ▶ Fabric demonstrates effective antibacterial and antiviral properties
- ▶ Improved personal protection against biological agents
- ▶ Offers potential reductions of infection risks to medical personnel and food processing and service workers, and public

CONTACT

Pooja N. Bhayani

pnbhayani@ucdavis.edu

tel: .



OTHER INFORMATION

KEYWORDS

Antibacterial, Antiviral,
Cotton Fabric, Infectious
Disease Transmission,
Personal Protective
Equipment

CATEGORIZED AS

- ▶ **Materials & Chemicals**
 - ▶ Textiles
- ▶ **Medical**
 - ▶ Disease: Infectious Diseases
- ▶ **Engineering**
 - ▶ Other

RELATED CASES

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PATENT STATUS

Country	Type	Number	Dated	Case
United States Of America	Issued Patent	12,270,127	04/08/2025	2021-628
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University of California, Davis
Technology Transfer Office
1 Shields Avenue, Mrak Hall 4th Floor,
Davis,CA 95616

Tel:
530.754.8649
techtransfer@ucdavis.edu
<https://research.ucdavis.edu/technology-transfer/>
Fax:
530.754.7620

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