Photo-Rechargeable Antibacterial/Antiviral Materials

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ABSTRACT

Researchers at the University of California, Davis have developed a method to incorporate and enhance photo-induced biocidal functions on compounds, polymers, fibers, films, and textiles for daylight-driven rechargeable antibacterial and antivirus applications such as personal protective clothing, food packaging materials and medical devices.

FULL DESCRIPTION

Outbreaks of emerging infectious diseases (EIDs) include severe acute respiratory syndrome, avian influenza, and Ebola virus disease (EVD). Current methods to prevent the transmission of EIDs involve wearing personal protective equipment (PPE) including facemasks, bio-protective suits, and medical gloves. Although PPE significantly minimizes pathogen transmission, it cannot eliminate the full risk of infection. Additional solutions to minimize risk include using pathogens to capture and intercept viruses through protective materials. The sustained infection activity of the pathogen, however, could easily cause cross-contamination and post-infection and might lead to increased risk of the pathogen spreading. This creates a need for more effective PPE materials that provide antimicrobial bio-protection from infection sources, especially for outdoor emergency medical services.

Researchers at the University of California, Davis have developed a method to incorporate photo-active agents on compounds, polymers, fibers films, and textiles to enhance biocidal functions. This new method has been used to develop fibrous and film materials with incorporated photo-active structures possessing prolonged and powerful light-rechargeable antibacterial/antiviral functions. The produced material can be recharged repeatedly under light exposure and are effective in both dark and daylight conditions. The materials produced by this method would produce safer versions of biological personal protective equipment (PPE), food packaging materials, and medical devices, and potentially prevent the transmission of infectious diseases.

APPLICATIONS

- Biocidal materials
- Photo-active antimicrobial/antiviral personal protective equipment (PPE)
- Biologically self-cleaning air and water filters
- Medical devices and products

FEATURES/BENEFITS

- Easy-to-use, field-deployable and durable
- Photo-biocidal functions
- Rechargeable through daylight exposure
- Environmentally friendly and safe
- Potentially prevent transmission of infectious diseases such as Ebola and respiratory viruses

PATENT STATUS

Country	Type	Number	Dated	Case
United States Of America	Published Application	20200221693	07/16/2020	2018-291

INVENTORS

- Si, Yang
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OTHER INFORMATION

KEYWORDS

photo-induced function, rechargable, light active, antimicrobial, antiviral, PPE, infectious disease, biocidal, photo-active, RNM, EIDs, EVD, nanofibrous membranes, fibers, films, textiles

CATEGORIZED AS

- **Materials & Chemicals**
  - Chemicals
  - Textiles

RELATED CASES

2018-291-0

ADDITIONAL TECHNOLOGIES BY THESE INVENTORS

- Fumigant Detoxification via Reusable Cotton Material
- Pesticide Detection: Methyl Iodide and Methyl Bromide
- Non-melting, Sustainable, Reusable, Plastic-Free and Biodegradable Food Coolant Cubes

▶ Environmentally Friendly Manufacturing of Nano, Micro and Sub-micro Fibers with Hybrid CAB System

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