Photo-Rechargeable Antibacterial/Antiviral Materials

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Technology 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.
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.

Additional Information

Additional Technologies by these Inventors

Environmentally Friendly Manufacturing of Nano, Micro and Sub-micro Fibers with Hybrid CAB System
Pesticide Detection: Methyl Iodide and Methyl Bromide
Personal Use Colorimetric Fumigant Sensors

Application area

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

Advantages

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

Institution

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