REMOVABLE WATER-RESISTANT MULTILAYER ANTIMICROBIAL COATING FOR CONTACT SURFACES AND ITS PREPARATION METHOD

KEYWORDS

- ANTIMICROBIAL
- GRAPHENE
- CONTACT SURFACES
- WATER-RESISTANT
- BIOCOMPATIBLE

AREA

- BIOMEDICAL

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Priority Number
n. 102021000000848_19.01.2021.

Patent Type
Patent for invention.

Ownership
Sapienza Università di Roma 100%.

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Industrial & Commercial Reference
The product is aimed at the market of surface disinfectants and antimicrobial protectants.

Time to Market
The degree of development of the product is at TRL 5, the time for development to place it on the market is about two years.

Availability
Cession, Licensing, Research, Development, Experimentation and Collaboration.

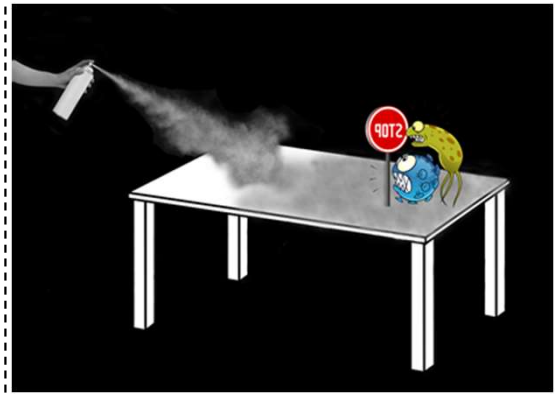
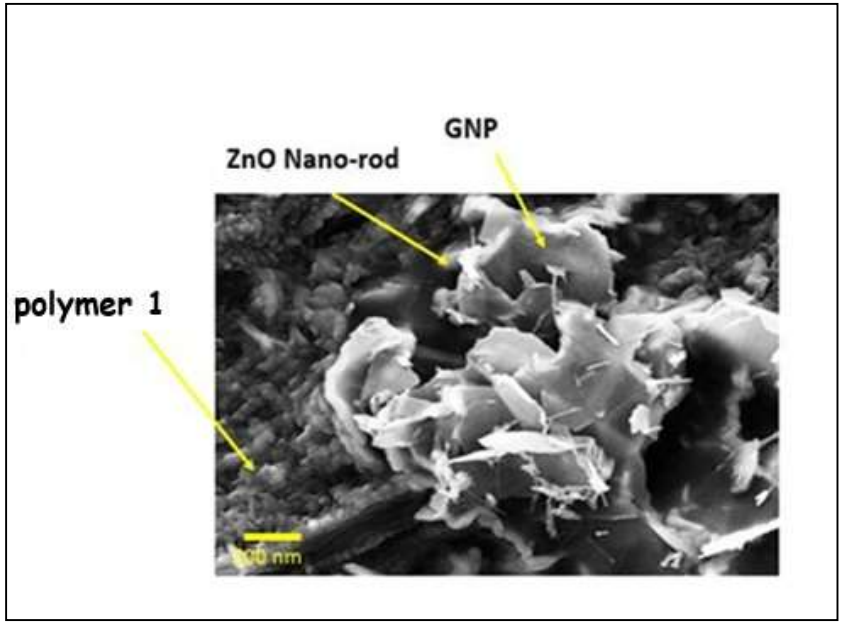


Fig. 1 Scheme of the product.

Fig. 2 Image of scanning electron microscope of antimicrobial coating.

Abstract
The product of this patent can guarantee an antimicrobial coverage to the high-contact surfaces. This product, based on nanotechnologies, can reduce the microbial load on the surfaces over time and is resistant to water. Compared to chemical interventions, this product, based on nanotechnologies, guarantees the result without giving rise to bacterial resistance. Furthermore, the non-toxicity of this compound allow an immediate usability of the treated material and an ease of application by operators. In fact, it can be distributed on surfaces by spray.



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Technical Description

The present invention relates to a multilayer coating with antimicrobial properties that can be used in various fields, including the hospital one, which is easily deposited on surfaces of different nature by spraying and capable of providing an effective removable barrier against pathogens. This water-resistant coating is characterized by the fact that it uses, as an antimicrobial agent, graphene nanoplatelets decorated or not with zinc oxide nanorods deposited by spraying on the surface of a polymeric material as a host layer to favor its dispersion and uniform surface distribution.

Technologies & Advantages

The technologies for obtaining this product are those necessary to produce polymeric materials and add them with nanomaterials, thus requiring low costs and ease of industrial scale-up. The addition of graphene-based nanomaterials and non-toxic zinc oxide makes the product innovative and easy to use.

The benefits relate to:

- High workability, it is in fact sufficient to spray the product on the surfaces to be treated;
- It is suitable for all cases that require microbiological control of the surfaces, in fact it has antimicrobial properties and is ecological. It is water resistant and has a high degree of adhesion to resin, metal or leather surfaces.

Applications

The product can be used as an antimicrobial barrier against both pathogens and degradative microorganisms that can stain and / or damage surfaces. The product can be distributed on tables, worktops, desks or horizontal surfaces, handles, objects and surfaces in general that we touch with our hands.

The antimicrobial protection does not replace regular cleaning but protects the surfaces between one cleaning and the next.

The fields of application, in addition to the nosocomial one, are wherever it is necessary to reduce the microbial contamination of surfaces such as schools, bars, restaurants.

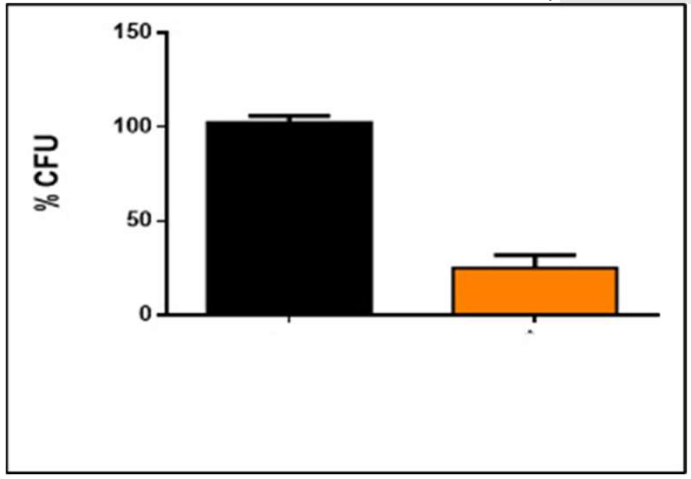

Fig. 3 Antimicrobial test of the coating surface (orange column) with respect to uncoated surface (black column).

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