

Antimicrobial textiles impregnated with copper and zinc oxides nanoparticles

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Extended Abstract

The toxic action of copper oxide nanoparticles is well known [1]. Their fixation in various matrices, reducing their mobility and accessibility to ingestion (penetration) in the human and / or animal body is not only desirable but also mandatory, if these nanoparticles will be used for preventive or in some cases even curative purposes [2]. The association between copper oxide nanoparticles and zinc oxide nanoparticles can lead to special biocidal effects [3].

The development of antimicrobial cotton fabrics using copper and zinc oxides nanoparticles has been investigated in this present work. The metal oxides nanoparticles were prepared by thermal decomposition of ammonium salts precursors.

The results show that the finished fabric demonstrated significant antibacterial, antifungal and even antiviral activity. The biocidal activity was correlated with the parameters used to obtain the nanoparticles.

The cotton fabrics were used for making of medical protective equipment: gowns, caps, gloves and even masks. All this medical equipment can be obtained through a simple impregnation process that can be performed in a single equipment. The process and equipment are described in a patent application [4].

The wash durability study of treated fabric was also carried out and found to withstand up to 10 wash cycles and due to this resistance to washing, medical equipment can be reused many times, preserving its biocidal properties. The biocidal characteristics of textiles mean that they do not constitute hazardous waste when degraded and can no longer be used.

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