Method for Nano Silver-Silica Composite Anti-Microbial Agent

Published date: Jan. 14, 2011

Technology description

Background

Increasing bacteria resistance to antibiotics threatens many people’ s life and the future of many antibiotics. Certain metals have been known to include anti-microbial properties. These properties are ideal for use in materials having a sustained efficacy against bacteria. Exemplary metals in this category can include silver, copper, zinc, gold, platinum, and palladium.
In the past, silver has been used in the food service industry and for home use, for example in goblets and silverware, because it is believed to inhibit diseases. In particular, colloidal silver appears to be useful as a strong, natural antibiotic and is effective against germs, bacteria, infections, parasites, viruses, fungus, and pathogens. When colloidal silver is near a virus, fungus, bacterium, or any other single-celled pathogen it acts as a catalyst to disable the oxygen metabolism enzyme without incurring harm to humans, animals, plants, and all multi-celled living mater. There is no resistance developed for the bacteria to silver colloids.
Current challenges in this art are coping with low cost production, stability, and shelf-life. A need exists in the art for the formation of silver nanoparticles for desirable disinfection efficiency, enhanced thermal stability for storage and distribution in various materials, and elongated disinfection.

Technology Description

The present invention relates generally to aerosols and, more particularly, to a method for forming nanosilver-silica composite having an anti-microbial agent. The method employs aerosol assisted evaporation induced self-assembly (EISA) for the synthesis of nano-structured silver-silica particles.
The silver nanoparticles that are created by this process can be released in a controlled manner from a nontoxic silica matrix for long term disinfection. The dry powder can be dispersed in water, plastics, or other medium and can be lipophilic by chemical modification of the particle surface.

Application area

This aerosol method is promising, providing a continuous low-cost method for large-scale production of advanced materials. The particle size, size monodispersity, evaporation rate can be well controlled. The process is quick, flexible, cheap, simple, easy to scale up, and causes less pollution.
Silver nanocomposites are advantageous as they are stable and extremely convenient for transportation, storage, dispersion, and application, providing elongated disinfection time. For example, the nanocomposites can be woven directly into fabrics or dispersed into electric appliances as pigments.

Institution

The University of New Mexico

Inventors

C. Brinker
Xingmao Jiang

联系我们

叶先生

电 话：021-65679356
手 机：13414935137
邮 箱：yeyingsheng@zf-ym.com