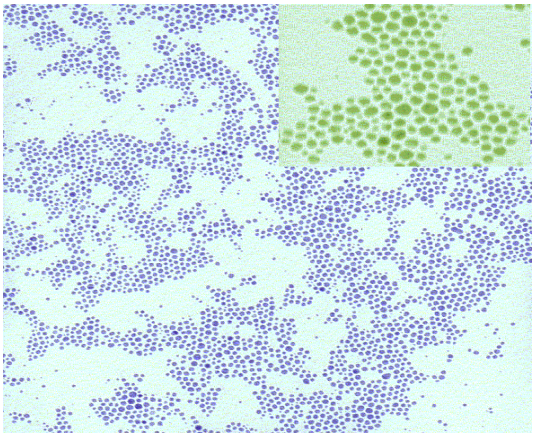
Technology Opportunity

The CUNY Center for Advanced Technology In Photonics Applications (CUNY CAT)
Designated by NYSTAR, the New York State Foundation for Science, Technology and Innovation

Biohazard Detection Using Silver Nanoclusters

In today's world it has become crucial to detect the presence of hazardous bio/chemical agents such as Anthrax, Sarin Botulinum toxin and other chemicals quickly and effectively. A new nanomaterial chemistry based on silver nanoclusters coupled to special key-template polymers has been developed which can produce qualitative and quantitative hazard specific detection. The indication of contamination is made by a color change on a surface to which these nano chemicals are applied and which have been exposed. The formulations can be adjusted such that the depth of the color change is a function of the concentration of the biohazard. Different formulations representing different biohazards can be also be applied to the same surface thus producing a "multi-hazard" sensor." This material can be applied to many different types of surfaces including paper to make "Biohazard Badges" akin to the film badges worn in nuclear radiation threat environments. However the color change can be seen directly on the surface without further processing. The material can be applied using many different existing processes including printing, spraying or spin coating.



Microscopic View of Nano Clusters

Benefits

- Qualitative and quantitative sensitivity to various biohazards (simultaneously)
- Ease of application
- Inexpensive high yield production process

How it Works

The basis of the technology lies in a very controllable and reproducible process for generating nano sized optically active nanoparticles of silver and other metals, which are combined with specially formulated polymers. These polymers prevent the metal particles from agglomerating until they attach themselves to the "key-template" molecule to be detected. Once the polymer has "acquired" the biohazard molecule it releases the nanometals to form into larger groups, which change their optical properties (Raleigh Scattering) and thus altering their color spectrum.

This technology opportunity sheet describes continuing efforts in this area. Several patents may have been issued or are pending and which may be available for licensing.

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