

Efficient Generation of Reactive Oxygen Species (ROS) for Disinfection

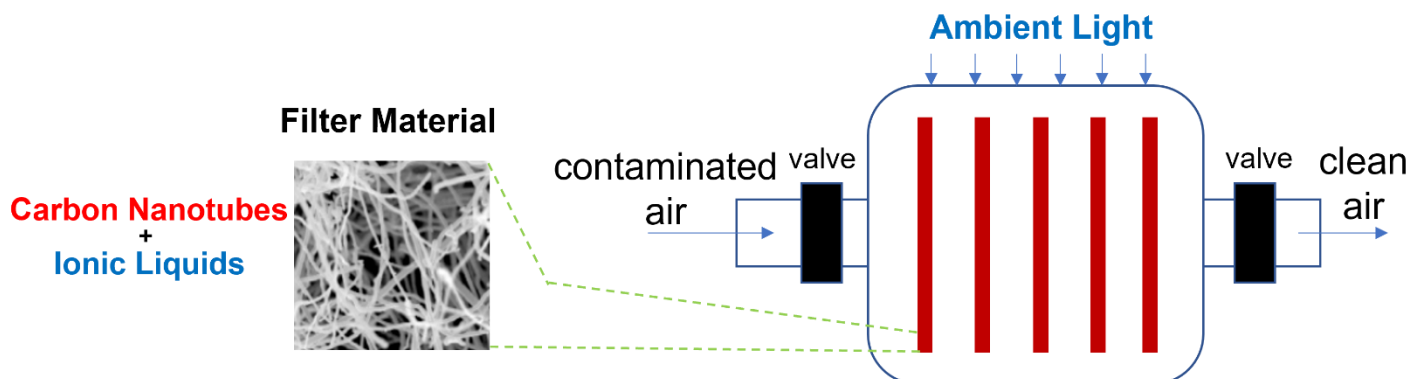
This is a novel technology for disinfecting air, water and surfaces. The technology employs a new chemical mechanism and materials for generating ROS ensuring a more efficient and stronger disinfection performance than current technologies. These materials when exposed to natural light generate disinfecting reactive oxygen species. In particular, the materials include single wall carbon nanotubes (SWCNTs) and non-aqueous ionic liquid (IL) which generate superoxide and hydroxyl radicals when activated by light.

ROS are disinfectants known to annihilate pathogens. Various ROS-based technologies have been developed for applications such as protein, virus and bacteria deactivation in laboratory environment. However, competing technologies have numerous shortcomings including: low yield, low reusability, and safety concerns. For example, many competing technologies have low yield because ROS are generated in water where they lose their effectiveness by reacting with water ions.

Advantages of our technology and materials include:

- low cost
- high reusability
- long duration usage and storage
- easy to use and
- safer than competing technologies

These materials are suitable for annihilating a wide range of organic and inorganic agents, such as viruses, bacteria, volatile organic compounds and hazardous / toxic gases. Overall, this new disinfection technology can make a significant impact in various industries, from healthcare to food processing to air and water purification. This technology effectively reduces the toxicity level caused by organic / inorganic small molecules, by bacteria, and by viruses.



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