

BUSINESS OPPORTUNITIES

STERILAIR: A compact air disinfection system against biohazards

This technology can be integrated in any air circulation system and its filtering efficiency is controllable by magnetic induction or laser heating.



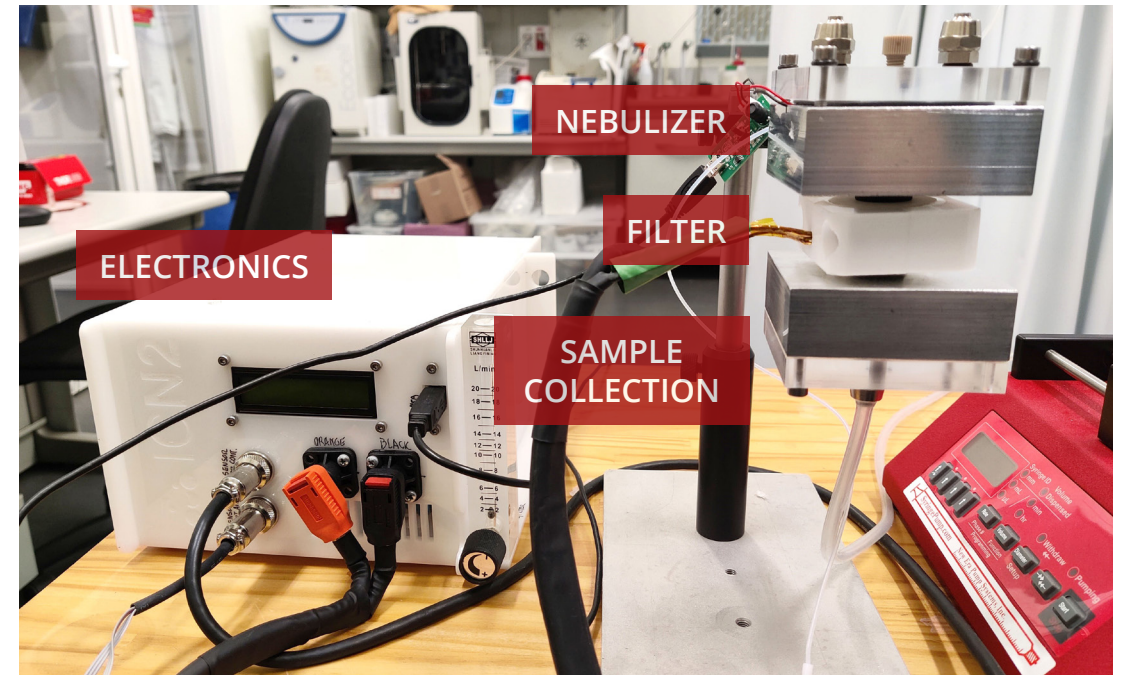
Institut Català
de Nanociència
i Nanotecnologia

APPLICATION LANDSCAPE AND NEED

The air disinfection, purification and sterilization markets are growing at a fast pace due to the increased air pollution in developed areas and a rise in airborne pathogens, especially in highly populated regions. The recent COVID-19 pandemic has caused a huge expansion of this sector, as it has significantly increased public concern about airborne pathogens, especially in hospitals and medical campuses.

Current air filtering systems are based on the use of HEPA filters, which only mechanically trap the pollutants and do not guarantee the filtering of small viral particles. In addition, they must be regularly replaced and do not support high temperatures or air pressures.

On the other hand, ozone or UV disinfection systems can be used to treat surfaces but cannot guarantee a proper disinfection of fast airflows. Furthermore, they require harmful radiation or radicals and cannot therefore be applied in the presence of people.



INNOVATION

The Catalan Institute of Nanoscience and Nanotechnology (ICN2) has developed **STERILAIR**, an innovative air filtering device that combines multiple strategies for sterilization.

STERILAIR is an air disinfection device consisting of a 3D ferromagnetic stainless steel microporous filter, which is heated wirelessly via magnetic induction with low energy consumption to thermally deactivate the pathogens.

In **STERILAIR**, the combination of local inductive heating above 150°C and pressure increase inside the micropores produces the

deactivation of all microorganisms in the air, even in the presence of large air flows. The air expansion after the filter minimizes the net temperature increase of the air flow. This technology provides a compact, highly efficient, low-cost air disinfection system that can also self-clean by inductive pyrolysis, thus maximizing durability and reducing maintenance.

APPLICATIONS

STERILAIR can be integrated in any air circulation or air-conditioning system including air supply circuits of cabins in transport systems, surgery rooms, hospitals, biohazard laboratories, commercial premises and domestic air circulation systems.

KEY ADVANTAGES

- ▶ Microporous structure with highly efficient inductive heating to locally deactivate the pathogens
- ▶ Filter recyclability
- ▶ Works under high air pressure
- ▶ Dry heat sterilization possible
- ▶ Self-cleaning feature, reducing maintenance requirements

STAGE OF DEVELOPMENT

STERILAIR is at the prototype stage. In vivo assays performed with nebulized pseudovirus in progress.

BUSINESS OPPORTUNITY

The ICN2 is looking for industrial partners interested in licensing the technology and/or collaborating on industrial prototyping and testing in relevant environment.

INTELLECTUAL PROPERTY: European patent application filed in June 2022 (EP22382611).



**Catalan Institute of Nanoscience
and Nanotechnology (ICN2)**

Campus de la UAB
08193 Bellaterra
Barcelona, Spain

Board of Trustees:



Business and Innovation Unit

+34 937 372 637

business.innovation@icn2.cat

www.icn2.cat

Center of:



Member of:

