STERILIZATION OF VARIETY OF MATERIALS, BIOMEDICAL AND FOOD PRODUCTION EQUIPMENT USING LOW THERMAL ATMOSPHERIC PRESSURE PLASMA JET COMBINED WITH ADVANCED OXIDATION PROCESSES

Fact Sheet

Project Information

PLASMA STERILIZATION
Grant agreement ID: 249257
Status
Closed project
Start date
15 April 2010
End date
14 April 2014

Funded under
FP7-PEOPLE
Overall budget
€ 100 000
EU contribution
€ 100 000

Coordinated by
POLITECHNIKA LUBELSKA
Poland

Objective

The compact, portable, low-temperature gas discharge plasma device for cold sterilization of various heat-sensitive surfaces and materials is proposed. The main reactor will be atmospheric-pressure plasma jet (APPJ). The features of the sterilizer will be as follows: - ability to work at the atmospheric pressure in several gas flow, frequency and current- voltage regimes, - application of various substrate gases: oxygen, air, nitrogen, carbon dioxide, and discharge stabilizing additives (argon, helium, tetrafluoromethane, ketone, methane), - flexibility and multiapplicability due to the exchangeable sub-units of the device: various sized and shaped tips, nozzles for gas, vapor, liquid spray and foam, which could be further combined with UV lamp
(Advanced Oxidation Processes, AOP). Through the combination of various decontamination techniques we hope to achieve 3D treatment effect instead only surface treatment achieves in most APPJ treatment technologies so far. Device will be used for inactivation of pathogens in plasmonic and biofilm form. Influence of the plasma treatment on the denaturing of materials (paper, plastics, fabrics, etc.) will be studied. Proposed sterilizer will be tested for preservation of solid food. Efficiency of the plasma- UV- antibacterial coatings will be tested.

Field of science

/natural sciences/earth and related environmental sciences/atmospheric sciences/meteorology/atmospheric pressure
/engineering and technology/materials engineering/coating and films
/engineering and technology/environmental engineering/energy and fuels/fossil energy/gas
/natural sciences/chemical sciences/inorganic chemistry/inorganic compounds
/natural sciences/chemical sciences/electrochemistry/electrolysis

Programme(s)

Topic(s)

Call for proposal

FP7-PEOPLE-2009-RG

Funding Scheme

MC-IRG - International Re-integration Grants (IRG)

Coordinator

POLITECHNIKA LUBELSKA

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Activity type

Higher or Secondary Education Establishments

EU contribution

€ 100 000

Website

Contact the organisation

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