

RESEARCH PROJECT

π Institute
Life Technologies

Reduction of micro-organism on food powder particles - Design and application of atmospheric plasma-reactors

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Description In specific food applications practically sterile powders are required. In many cases conventional methods for sterilisation, such as autoclaving fail due to sensibility of powders to heat, humidity and / or mechanical stress.

Cold atmospheric plasma provides an alternative mechanism of inactivation of microorganisms on food powders or surfaces of equipment, packaging etc. Low temperatures combined with short treatment times have been found to inactivate even most heat resistant microbial spores. A capacitive coupled - low pressure, a dielectric barrier discharge (DBD) and a surface micro discharge (SMD) plasma device was used in order to characterise kinetics of inactivation of microbial spores, the impact of various process parameters such as power input, process time or surface charge with contaminants and to develop a process concept for decontamination of food powders. One of the devices applied currently in a laboratory scale is supposed to have the potential to be applied on continuous flowing, dry powdered food and in a large scale. For decontamination of powder of less sensibility to humidity a vacuum-steam-vacuum fluidized bed process including pilot plant scale equipment was developed (Hörmansperger et al., 2016).



Capacitively coupled, low pressure flat plate reactor

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