

# ACTIVE GRAPHENE BASED FOOD PACKAGING SYSTEMS FOR A MODERN SOCIETY



Packaging for perishable foodstuffs such as meat and cheese must be impermeable to liquids, gasses and light, must not promote the development of microorganisms and should ideally be recyclable.

## Technology

The main purpose of the GraFood project, which was approved under the Era.net program, was to develop active packaging for perishable foods at the prototype level. The packaging consists of a composite material based on paper or polylactic acid modified with graphene oxide and silver and titanium dioxide nanoparticles. The surface of the packaging is activated with probiotics. The function of graphene oxide is to prevent the permeability of the base material for gasses and liquids. In addition to titanium dioxide, graphene oxide also absorbs visible and ultraviolet light. Silver nanoparticles are attributed a biocidal role. All three additives are located within the base material and do not come into direct contact with the food. On the surface, in direct contact with the food, there is a probiotic (*Lactobacillus plantarum*) which inhibits or prevents the development of pathogenic microorganisms. After use, titanium dioxide and silver nanoparticles can be recycled and reused by heat treatment.

## Main advantages

Reduction in the number of pathogen infections (e.g. salmonella)

Cost reduction by processing unsold sensitive food

Reducing the amount of food waste and consequently lowering the cost of processing it

## Use

Packaging for the storage of perishable foodstuffs, especially meat and cheese.

## Key words

Active packaging, food, probiotic

### TYPE OF COOPERATION

R&D cooperation and technology licensing opportunity

### INTELLECTUAL PROPERTY

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### MORE INFORMATION ABOUT THE INVENTION

