



BIOSMART
BIOMATERIALS FOR SMART FOOD PACKAGING



BIO-BASED INDUSTRIES
Joint Undertaking
www.bbi-europe.eu

Bio-based smart packaging for enhanced preservation of food quality

biosmart-project.eu

Project Data:

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End date: 30/04/2021

Duration: 48 months

Type of Action: RIA - Research and Innovation Action

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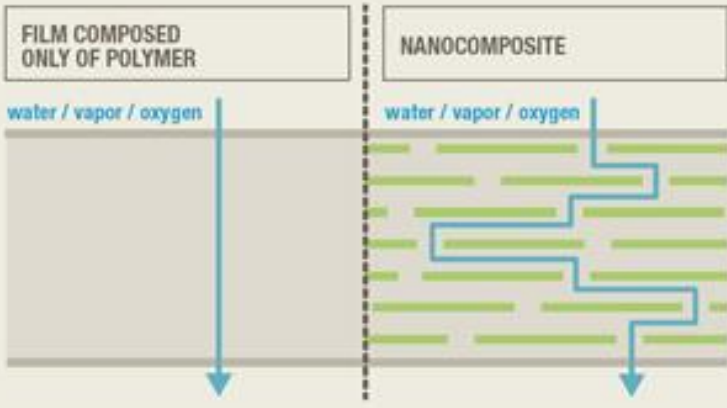
This project has received funding from the Bio Based Industries Joint Undertaking under the European Union's Horizon 2020 research and innovation programme under grant agreement No 745762.

Drops of water on a super-hydrophobic surface



NANOCOMPOSITE

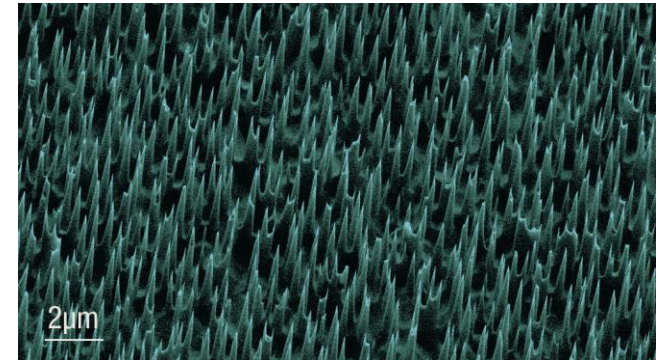
Tortuous pathway created by incorporation of exfoliated clay nanoplatelets into a polymer matrix film



The BIOSMART project will develop **active and smart bio-based and/or compostable packages** to meet the needs of both fresh and pre-treated **food applications**. To address future demands, packaging will need to enable **light-weighting, reduced food residues, easier shelf life monitoring and longer shelf life**, easier consumer waste handling, all without a price premium.

BIOSMART encompasses an approach for selectively integrating **super-hydrophobic surfaces, micro-encapsulated phase change materials, barrier coatings, sensor devices and new bio-active antimicrobial and antioxidants**, into fully **bio-based multilayer flexible plastic packages**.

SEM image of nanospikes for antimicrobial properties





OBJECTIVES

The BIOSMART project aims to meet the following scientific and technological objectives. It will:

- **Develop** an operational framework for **tailoring active and smart functional bio-based packages**.
- **Scale up** existing laboratory level **active and smart technologies to prototype pilot scale**.
- **Improve mechanical properties of the Polylactide (PLA) film** by developing nanoclay composites and copolymers.
- Implement single or multiple active and smart technologies into **three food package demonstrators** at acceptable costs.
- **Reduce the overall environmental impact** of the value chain.
- Introduce **novel bio-based lipopeptide and peptide additives** with anti-microbial, anti-fungal and/or anti-oxidant properties to increase food shelf life.
- Develop biobased solutions and **new coatings with enhanced O₂, CO₂, water and UV barrier properties** that will provide a 100% control of residual oxygen and degradation indicators in packages made from this biomaterial.
- Develop an **Application for selection of biobased materials**, in function of the performance and functionality for commercial needs of the packaging.