

HYPERBIOCOAT

High performance biomass extracted functional hybrid polymer coatings for food, cosmetic and medical device packaging

Summary

Biodegradable packing seems everywhere, but in fact is not used for a range of demanding applications. For many food products, current materials do not provide the required protection against water vapour, oxygen or flavours. Current solutions demand coatings that are not fully biodegradable

HYPERBIOCOAT examines how existing technology can be used to develop biodegradable polymers derived from food processing by-products, which can provide the high levels of protection required for the demanding areas of food, cosmetic and medical device packaging. Ultimately, this would permit packaging without the need for non-biodegradable additives.

The project will identify potential biodegradable polymers, characterise their chemical composition and properties and focus on extraction processes that can be scaled up to industrial levels.

Objectives

- Develop and validate at pilot scale a competitive & sustainable extraction process for candidate molecules from hemicellulose and bio-polyesters coming from waste side streams of lignocellulosic biomass (agro-industries: fruits, food)
- Synthesis and up-scale of the synthesis process of a novel functional hybrid bioORMOCER® lacquer
- Performance validation of the hybrid functional molecules as coating for packaging applications with LCA (life cycle approach) performance > 20% compared to commercially existing solutions (PET SiOx laminated)

HyperBioCoat

<http://www.hyperbiocoat.eu>

Type of Action:

Research & Innovation Action

Value Chain: VC1 –

lignocellulose

Start date: 01 September 2016

End date: 31 August 2019

BBI JU contribution: € 4,617,423.75

Expected impacts

- At least two new functional molecules for surface treatment
- Enhanced or equal properties for the developed molecules with respect to conventional counterparts, measured against relevant industrial standards
- Reduction in cost of more than 10 % as compared with conventional molecules

Project coordination

- Fraunhofer Gesellschaft e. V. (Germany)
- Unilever Polska Sp. z o.o. (Poland)
- Mi-Plast LLC, Croatia)
- Fundacion Aitiip (Spain)
- Dupont de Nemour International SARL (Switzerland)
- Plasma Electronic GmbH (Germany)
- Stefanski Claus (Austria)
- Bionatic GmbH & Co. KG (Germany)
- Laboratori Archa SRL (Italy)
- Cosmetic SP (Greece)
- Bayernwald Fruchteverwertung KG (Germany)
- Herbstreith & Fox KG Pektinfabriken (Germany)

Organisation name: Fraunhofer Gesellschaft e. V. (Germany)