EXPLOITABLE FOREGROUND

Development of 2nd Generation Biorefineries - Production of Dicarboxylic Acids and Bio-based Polymers Derived Thereof

Novel polymerization methods by reactive extrusion to obtain new PLA-Copolymers with enhanced properties

bioREFINE-2G

Explanation and Purpose

Biopolymer markets are experiencing huge growth expected to continue in the near future, mainly driven by growing European and North American markets and intense focus on industrial expansions.

One example of the competitive advantage of biopolymers is the use of new bio-adhesives and biomaterials in Tetra Paks or in laminated complexes of PLA (Polylactic Acid) with other bio-polymers ensuring fully biodegradable products. In this context development of PLA derivatives with improved properties (in line with the bio-polymer concept) will guarantee access to the PLA market.

As European consumers are demanding more environmentally friendly products in the packaging sector, an increase in demand is expected. Finding new bio-adhesives derived from bio-glutaric and/or bio-fumaric acids will be a value proposition for these new polymers enabling companies to access a large market in which until today bio-adhesives and enhanced biomaterials are poorly developed, thus offering a direct competitive advantage.

Exploitation Strategy

Technical data sheets for new materials will be prepared and distributed at fairs and congresses.

Specific roadmap for PLA producers will be developed to offer them the new materials. Furthermore, the concept of the integrated synthesis production process of reactive extrusion will be communicated to the relevant scientific community via conferences.

IPR Measures

Trademark application is planned and a patent will be submitted to protect the new copolymers as well as the fabrication process by AIMPLAS and Ecopol Tech together with interested companies.

Further Research

The polymerization by reactive extrusion is currently under optimization. Molecular weight and material properties will be adjusted to fulfil the requirements of the packaging industries.

Impact of Exploitation

The new PLA copolymers show improved properties and similar cost compared to fossil-based PLA.

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