

## ***New flexible PLA with a higher impact resistance as potential substitute of polypropylene in food packaging***

*AIMPLAS has completed its participation in the European project INNOREX, which has allowed developing an innovative method to formulate PLA without metallic catalysts and using alternative energies.*

*An improved PLA has been achieved, with a resistance 200 % higher than normal, so it can be used when manufacturing food packages, thus replacing polypropylene.*

**Valencia (06-09-2016).**- AIMPLAS, the Plastics Technology Centre, has completed its participation in the European project INNOREX. By means of these researches, it has been possible to develop an innovative process to obtain PLA improving its mechanical properties, thus allowing its application in injected packages and replacing polypropylene.

The main innovation in the process of PLA achievement developed within the project InnoREX is the use of an extruder as a reactor to produce polylactic acid (PLA) from lactide. This new technology allows doing without metallic catalysts and using alternative energies to improve the reaction's kinetics, as well as doing a measurement in line with material viscosity during the process. A wide research has been made, related to how the final properties of biopolymers are modified by adding additives and/or fillers, where a modified PLA has been achieved, more flexible and 200 % more resistant to impact than the conventional one.

Thanks to these improvements in its properties, it has been established that the new material can be used in food packaging manufacturing by injection and thermoforming, where PLA can replace polypropylene. In this way, we are contributing to reduce the consumption of conventional plastics by others coming from renewable sources and biodegradable. Moreover, the elimination of metallic particles in the process will result in an environmental improvement and for the safety of workers, as well as an opportunity for the application of these biopolymers in new sectors, such as biomedicine.

### **Synthesis of a new catalyst**

After a long research, it has been achieved the synthesis of a new eco-friendly and organic catalyst to catalyse the polymerisation of lactide, thus getting a robust conversion of monomers to obtain a high molecular weight PLA with good polydispersity and optimal

optical purity. In addition, the results obtained are reproducible at bulk scale and there is the possibility of extrusion.

### PLA procurement process

The procurement of PLA has been made by means of polymerization by Ring-Opening Polymerization (ROP) through a reactive extrusion process that unifies in a unique process the chemical and the pellet synthesis. Moreover, the use of alternative energies, such as microwaves or ultrasounds has allowed getting an energetic reduction up to 20 % when obtaining the final material.

AIMPLAS has been part of the European Project INNOREX together with other 11 European companies and technology centres under the coordination of the German centre Fraunhofer Institute for Chemical Technology. The project has been funded by the Seventh Framework Programme under grant agreement no 309802 with a duration of 42 months.

### About AIMPLAS

AIMPLAS, the Plastics Technology Centre is located in Valencia, Spain and is recorded at the Register of Technological Centres of the Spanish Ministry of Economy and Competitiveness. The institute is member of FEDIT (Spanish Federation of Innovation and Technology Entities) and REDIT (Network of Technological Institutes of the Valencia Region).

AIMPLAS is a non-profit research association with the object to operate as a technological partner for enterprises from the plastics industry and thus offering them integral and customized solutions by coordinating research, development and innovation projects as well as technology services (analysis and testing, technical assistance, training as well as competitive and strategic intelligence).

AIMPLAS is attending the K Fair (hall 7, level 1, stand B41), where it is exhibiting the information and materials developed within the project InnoREX.



*Inno***REX** 

**You are welcome to link to our website**  
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