14 European partners join in a project dedicated to the production of plastics made of algae, which are cultivated with carbon dioxide (CO_2) from industrial sources.

14 companies, technological institutes and universities from 7 European countries participate in a European project based on the cultivation of microalgae to obtain the extraction of additives for the production of adhesives, inks and paints.

The microalgae are cultivated in photobioreactors and only need sun light and carbon dioxide (CO_2) from industrial emissions, which are also the source for the extraction of ingredients to produce different products in the chemical industry.

Valencia (2 December 2013).-

The Technological Institute of Plastics (AIMPLAS) coordinates an ambitious investigation project that allows the obtainment of different substances for the production of adhesives, paints and inks originating from a renewable source such as microalgae. The use of these plants provides an added value to the project, as they are cultivated by the emission of CO_2 from industrial sources as cement plants or electric production plants. This process contributes to reduce the impact of these gases on the environment.

The project was launched on 1 November 2013 and will run for 42 months and is financed by the European Commission under the 7th Framework Programme (7FP). Its purpose is to select and cultivate new varieties of these organisms that allow the optimization of the extraction of high added value products for the industry. The basis is a developed technology by the enterprise Biofuel Systems (BFS) in Alicante, Spain, with the objective to obtain artificial fuel from microalgae.

The scope of the project and its ambitious objectives require the participation of partners from different fields. In a first phase, the project activity includes the selection and cultivation of the best varieties of microalgae in photobioreactors from the laboratory which will also be optimized to achieve the highest possible volume of the product. Microalgae have rapid growth rates in CO_2-rich environments. Thus, more than 150 tons of dry biomass per hectare can annually be produced in those photobioreactors.

Reduction of CO_2 emissions from industry

One of the main advantages of this technology is that those plants only need sunlight and carbon dioxide to grow. Therefore, the gas emissions from industrial sources, such as cement plants or power generation companies, are additionally used to achieve a reduction of the environmental impact of these installations. Moreover, each project team focuses on the extraction of individual compounds originating from microalgae. That allows the production of new additives for the formulation of industrial products, which have the advantage of being 100% renewable.

A first valuation of the original biomass is followed by the extraction of its lipid fraction and thus polyurethanes can be obtained to be used as components for adhesive products. Simultaneously, the extraction of proteins creates amino acids and lactic acid for the food industry. The resting biomass undergoes firstly a thermochemical process for its total exploitation and secondly, to obtain surfactants and other chemical substances for the production of paints and inks.

The following institutions or enterprises participate in the project: Biofuel Systems, University of Warwick, VTT, Beckers Industrial Coatings, Sun Chemical, Process Design Center B.V., Bangor University, Croda International, 3V Mabo, Phycosource, Gruene-Bioraffinerie, Caspeo, Cromogenia and the Technological Institute of Plastics - AIMPLAS.