

Chimica e nuovi materiali

PARTNER SEARCH PMI7-EU-BSGSME-26

01 dicembre 2017

Oggetto: PARTNER SEARCH PMI7-EU-BSGSME-26

Richiesta di un centro di ricerca francese alla ricerca di partner italiani da includere in un loro progetto da presentare nel programma CAPACITIES tematica RICERCA PER LE PMI .

codice PARTNER SEARCH PMI7-EU-BSGSME-26, riferimento tegas@apre.it

----- PARTNER SEARCH PMI7-EU-BSGSME-26 -----

<Reference n.: PMI7-EU-BSGSME-26>

<Deadline: 12/03/2008>

<Programme: CAPACITIES>

<Project Title: "POLYGREEN" : Novel polyurethanes and polyesters from rapeseed and sunflower oils>

<Financial Scheme: >

<Description: Polymers are generally produced from petroleum. These polyols are useful in a large range of applications such as coatings agents, adhesives, sealants, elastomers, resins and foams. They are used in a wide variety of fields including the textile, plastic, medical, chemical, manufacturing, and cosmetic industry.

Nowadays, there is a growing interest to produce biopolymers for technical purposes. In recent years, natural oils have attracted renewed attention as raw materials for the preparation of original polymeric materials with the objectives to replace petro-chemical based polymers and also to develop novel materials for specific applications. Triglyceride oils are the most important sources for biopolymers. Oil-based biopolymers have many advantages compared with polymers prepared from petroleum-based monomers. They are

biodegradable and, in many cases, cheaper than petroleum polymers. Research in recent years has focused on alternative, non-petroleum based source of polyols. One area of focus has been the production of polyols from natural oils, with vegetable oils being of particular focus. Among these vegetable oils, linseed, sunflower, castor, soybean, palm and tall oils are commonly used for the synthesis of oil-modified polymers. But in any case all these products are prepared in classical steps, mainly epoxidising the double bonds by reacting with an acid and then opening the oxirane ring with a proton donor as water or monohydric or polyhydric alcohols. A poor attention was devoted to the catalysis and to the process of polymerization, involving these functional monomers.

Therefore, the objective of this research proposal is to investigate novel routes to polyurethane and polyester materials based on colza and sunflower oils, taking into account a large number of the green chemistry concepts. Indeed, the synthesis of polyurethanes and polyesters usually requires the help of Sn- or Ti-oxide catalysts, for example. Therefore, it is proposed to substitute such metal-based catalysts by natural tertiary amines. In addition, a special attention on the polymerization technique is also proposed. Typically, bulk (no solvent) and dispersion polymerizations in water and CO₂ leading to polymeric particles will be investigated. Finally, to have a complete "green approach" for the synthesis of such polymeric materials -polyurethanes in particular-, non-isocyanate routes to such materials is proposed.

The project is divided into two parts. In the first one, different strategies leading to polyurethanes and polyesters from esters of fatty acids are presented. In the second part of the project, a nonisocyanate route to polyurethanes is proposed. >

<Organisation Type: Centro di Ricerca>

<Partner Sought: We seek SMEs from European Union or Associated Countries who are :

Manufacturers or users of polymers including polyurethanes and polyesters or other biopolymers based on derivatives of vegetable oils
Targeted markets are : materials, coatings, rigid foams, plastic industry, electronic circuits, adhesives, elastic, paints...

Technology needed : Facility to produce between 5 and 100 kg of polymers and/or to perform tests on polymers>