PCAS AND ITS SUBSIDIARY PROTEUS AT THE HEART OF THE GREEN EPOXY PROJECT
For a non-toxic, biobased alternative to rigid epoxy resins

Longjumeau, Wednesday, October 30, 2014

Protéus, leader of the Green Epoxy project, and PCAS, industrial developer of technology, have passed an initial milestone in the strategy to activate the synergy between Biotechnology and Chemistry to build a more competitive offer.

PCAS, a Fine and specialty chemicals group, and its subsidiary Protéus, a biotechnologies company specialized in enzyme and microbial strain production for industrial applications, are at the heart of the Green Epoxy project. This project, which is being led by Protéus, is sponsored by the Trimatec, IAR and Axelera competitiveness clusters. The project was selected during the 18th *Fonds Unique Interministériel* (government fund for competitiveness cluster projects) issued on September 26, 2014.

The three-year Green Epoxy project has a total budget of 2.8 million Euros, 1.2 million of which come from grants by BpiFrance (a public investment fund) and the *Conseils Régionaux* (Regional Councils) of the Languedoc-Roussillon, Picardie and Rhône-Alpes regions.

The objective of this project is to find a biobased non-toxic alternative to rigid epoxy resins (biomass products derived from the forestry industry). Epoxy resins that have unique characteristics (adhesive, low contractility, physical resistance, electrical properties and excellent chemical resistance) are widely used in paints, varnishes, glues and materials for the aeronautics, metallurgical and sporting equipment industries, but are generally manufactured with bisphenol A (BPA). BPA is now classified as a carcinogenic, mutagenic and reprotoxic (CMR) substance.

To develop the Green Epoxy project, the PCAS Group made use of its key areas of expertise throughout the value chain as well as the support of Transferts LR (a regional innovation agency in the Languedoc Roussillon region of France). Protéus, which works in monomer enzyme stabilization, is relying on the experience of Alliance Forêt Bois (biomass supplier), Lefrant Rubco (scaling-up and industrialization of extraction and purification processes) and PCAS (scaling-up and industrialization of functionalization processes). In order to deliver applications that are in line with market expectations, three final users, Diam Bouchage (manufacturer of micro-agglomerated corks), Resipoly Chrysor (floor coverings) and Prospa (industrial paints) are involved in the first design phases. The UMR IATE (biomass fractionation) and SPO (tannin polymerization) of the Institute Charles Gerhardt (tannin functionalization) complete this consortium.

The main deliverables for the Green Epoxy project are a range of biosourced epoxy resins intended as floor coverings and industrial paints as well as for food industry applications. Special attention will be paid to the toxicology and ecotoxicology of these new molecules, the use of competitive processes and the analysis of the environmental impact of these new materials.

The consortium also targets:

- The creation of a local biobased epoxy resin production entity for handling all steps from biomass sourcing to the marketing of biosourced epoxy resin-based bottle corks, floor coverings and industrial paints.
- Increased sales to end users who want to substitute current products with biosourced products and the creation of 24 jobs within five years of launching the project.

The Consortium

- Industrial partners

Alliance Forêt Bois is a cooperative that provides support to help foresters with the exploitation and management of their forestry resources.

Lefrant-Rubco, one of the worldwide Factice industry leaders, offers a wide range of biosourced additives: Browns - Ambers - Whites, depending on the applications.

Resipoly Chrysor manufactures jointless industrial and athletic floor coverings made from thermohardening resins (epoxy or polyurethane). Resypoly Chrysor is the French leader in its market.

Diam-Bouchage manufactures and sells micro-agglomerated corks.

Prospa is a French industrial paint designer for the automotive, agriculture and other metal media sectors, such as vats and modular constructions.

- Academic partners

The Institute Charles Gerhardt (ICG), which is the *Institut de Chimie Moléculaire et des Matériaux of Montpellier* (the Montpellier Molecular Chemistry and Materials Institute), is the culmination of the joint efforts of six UMR multidisciplinary research centers. It is organized into ten expertise teams of 230 permanent researchers and over 180 visiting researchers (doctoral students, post-doctoral researchers and guests).

The INRA through two UMRs:

The *Unité Mixte de Recherches Ingénierie des Agro-polymères et Technologies Émergentes* (UMR IATE) is a multidisciplinary agropolymer and emerging technology research unit comprised of the INRA, CIRAD, Université Montpellier II and SupAgro researchers (respectively the French agricultural research institute, agricultural development institute, Montpellier University and agricultural engineering school). The overall objective is to expand knowledge on uses for plant products and their components to improve their performance both for food and non-food related applications.

The *Unité Mixte de Recherches Sciences Pour l'Œnologie* (UMR SPO, or enological sciences multidisciplinary research unit) is comprised of 75 researchers and professors of the INRA, Montpellier SupAgro and Université Montpellier 1, making it one of the biggest international oenological research centers.

About PCAS

Founded in 1962, PCAS is an international fine and specialty chemicals group (165 million € net sales in 2013) that shares an ambition for excellence with its customers, which primarily include market-leading international groups. PCAS designs and delivers the best industrial solutions for its customers' specific expectations. These various expectations all share a common demand for safety, quality, competitiveness, innovation and sustainability. PCAS also develops ranges of proprietary products based on intellectual property.