



- Press release -

CARBIOS: new success with the development of a depolymerization process at 100% of plastic bottles

- ✓ **A technology applicable to the global market of PET based plastic bottles, packaging and films**
- ✓ **A process addressing a market worth more than 31 billion dollars per year**

Clermont-Ferrand, France, November 28, 2016 – CARBIOS (NYSE Alternext in Paris: ALCRB), an innovative green chemistry company specializing in enzymatic bioprocesses applied to plastic and textile polymers, today announces that it has taken a major step forward in the development of its enzymatic biorecycling process of polyesters by rendering it applicable to crystalline PET (polyethylene terephthalate), and therefore to all kind of plastic waste containing PET, namely bottles (transparent, opaque or multi-layer), packaging and films. This follows CARBIOS' previous announcement that it had successfully depolymerized 100% amorphous PET based commercial products into its original monomers, TPA (terephthalic acid) and MEG (mono ethylene glycol).

This new step is a world premiere that confirms the applicative potential of CARBIOS' technology and offers the opportunity of an infinite biorecycling of plastic products made out of amorphous and/or crystalline PET. This enables CARBIOS to access a market estimated to be worth more than 31 billion dollars¹ per year.

The patented depolymerization process developed by CARBIOS enables the regeneration of monomers with no loss in quality. After separation and purification, these monomers could then be used for the synthesis of virgin PET coming at 100% from CARBIOS enzymatic biorecycling process.

This new milestone, achieved within the THANAPLAST™ project, highlights the effectiveness of the collaboration between the teams from CARBIOS, the LISBP laboratory and the CRITT Bio-Industries from INSA Toulouse (under the aegis of TWB). By developing a new and competitive pretreatment process of crystalline PET associated with its selective depolymerization, this public-private partnership reflects the potential of this disruptive innovation to move swiftly into an industrial pilot development stage.

¹ Source SRI Consulting in 2010, Samsung in 2010, ICIS in 2009, MicroMarket Monitor in 2015, Tecnon in 2013 and IHS in 2014

Alain Marty, Chief Scientific Officer of CARBIOS says, *“I’m proud that CARBIOS, the LISBP and the CRITT Bio-Industries teams met this incredible challenge that was to create a 100% recycling process for bottles (water, milk...) and cosmetic packaging products. This success is the result of a multidisciplinary approach combining the screening of microbiological biodiversity, the discovery of a remarkable enzyme, its evolution by enzymatic engineering, and process engineering.”*

The market of PET plastics represented a world production of 21 million tons in 2014², with an annual growth rate of 4 to 5%³. The exceptional properties of this thermoplastic material make it the most favored polyester for manufacturing plastic bottles (69% of PET plastics), films (14%), packaging (10%) and other applications (7%). However, conventional technologies to recycle PET involves heavy sorting constraints for a limited recycling rate and above all, the production of lower quality secondary products.

CARBIOS provides a first-ever solution to satisfy demand of PET plastic manufacturers and meet current issues of the recycling industry. By making amorphous and crystalline PET infinitely recyclable, CARBIOS opens a new market which will enable the production of high performance plastics composed entirely of recycled PET. This solid and highly selective technology offers in the meantime the ability to efficiently treat plastic waste that is currently not recycled. This will also support the orientations of the European Commission “Circular Economy Package”⁴ to reach at least 55% of recycling for plastics by 2025.

“These results comfort our innovative industrial approach in PET based plastic biorecycling and offer the prospect of an early deployment of our proprietary technology together with the largest global players in this industry” stated Jean-Claude Lumaret, CEO of CARBIOS.

About CARBIOS

CARBIOS is a young, innovative green chemistry company, whose mission is to find biological solutions to the environmental and sustainable development issues faced by industrial businesses today. CARBIOS acquired the rights to research that was conducted over a number of years by various public and private sector laboratories. By leveraging the unique properties of biological catalysts (enzymes), it has used this research as the foundation for developing innovative industrial bioprocesses that optimize the technical, economic and environmental performance of polymers (thermoplastic materials and synthetic or food-based fibers). The company has focused its efforts on a strategic application sector: plastics. CARBIOS’ growth strategy is based on a clear business model of industrial value creation that targets attractive markets, develops innovative and competitive bioprocesses and licenses them to major industrial stakeholders for commercialization. CARBIOS benefits from the financial support of the leading European venture capital firm Truffle Capital. CARBIOS was founded in 2011 and has been managed, since its inception, by the *Holding Incubatrice Chimie Verte* fund. CARBIOS was granted the label “Young Innovative Company” by Bpifrance (former OSEO) and is eligible for investments by private equity mutual funds (FCPIs).

For more information, please visit: www.carbios.fr

CARBIOS is eligible for the PEA-PME, a government program allowing French residents investing in SMEs to benefit from income tax rebates.

² Source SRI Consulting in 2010, ICIS in 2009 and Samsung in 2010

³ Source Smithers Pira in 2014, Icis in 2009 and Pira International in 2012

⁴ Source European Commission « Circular Economy Package » – Amendment to the directives 2008/98/CE & 94/62/CE

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