



Carbios and L'Oréal win Pioneer Award for the world's first enzymatically recycled cosmetic bottle

- The Solar Impulse Foundation recognizes Carbios' breakthrough innovation and its adoption in 2021 by L'Oréal with the world's first fully enzymatically recycled plastic cosmetic bottle
- Carbios has begun construction of the world's first PET biorecycling plant, and has begun licensing its technology internationally from 2024

Clermont-Ferrand (France), 14 November 2023 (17:30 CET). Carbios, (Euronext Growth Paris: ALCRB), a pioneer in the development and industrialization of biological technologies to reinvent the life cycle of plastic and textiles, and L'Oréal, the world's leading beauty player, have won the "Pioneer Awards" in the Industry category, presented by the Solar Impulse Foundation at the first World Alliance Summit. This prestigious prize was awarded to Carbios for its enzymatic PET recycling solution, labeled "Efficient Solution" by the Solar Impulse Foundation since 2019, and to L'Oréal for using this breakthrough technology for the first time in a cosmetics bottle prototype. Carbios' solution offers brands an alternative to petro-sourced plastic that helps them meet their sustainability commitments. This revolutionary advancement paves the way for future applications in other sectors such as packaging, food and beverage, and textiles.



Figure 1: Carbios and L'Oréal win the "Pioneer Awards" – represented by Emmanuel Ladent (CEO Carbios, on the left) and Jacques Playe (Packaging and Development Director at L'Oréal, on the right) for the world's first enzymatically recycled cosmetic bottle

Emmanuel Ladent, Chief Executive Officer of Carbios: *"We are very proud that Carbios' biorecycling technology has been recognized as a pioneering solution. The success of our industrialization depends in part on our ability to forge strategic partnerships, such as the close collaboration we have built up with L'Oréal over the last few years. We share a common vision to accelerate the transition to a circular economy for plastic."*

Jacques Playe, Director of Development and Packaging at L'Oréal: *"We are delighted with this recognition, which highlights our partnership with Carbios. We are convinced that it is by combining the best of innovation, such as the technology developed by Carbios, with the power of industry, that we can develop a more circular economy and encourage other companies to adopt a similar approach."*

Bertrand Piccard, Serial explorer, psychiatrist and clean technology pioneer, Initiator and Chairman of the Solar Impulse Foundation: *"Congratulations to Carbios and L'Oréal, winners of the inaugural Pioneer Awards! In 2019, Carbios was among the first solutions to be labeled "Efficient Solutions" by the Solar Impulse Foundation. I'm excited to see how it has become a real-world solution. Thanks to this revolutionary, environmentally-friendly packaging, this winning solution has a significant impact, and its replicability in different markets and applications will guarantee its impact on a global scale."*



Figure 2: The 2021 pilot edition of Biotherm's (L'Oréal) "Waterlover" in recycled PET using Carbios' biorecycling process.

Carbios and L'Oréal: a long-term collaboration

Since 2017, Carbios and L'Oréal have been working together with a shared vision of accelerating the transition to a circular economy for plastic. In 2017, both companies created a Consortium to improve the recyclability and circularity of PET packaging. Nestlé Waters, PepsiCo and Suntory Beverage & Food Europe joined this Consortium in 2019 to scale up Carbios' innovation. The world's first enzymatically recycled PET packaging was made in 2021 using Carbios' biorecycling process. The world's first PET biorecycling plant is

scheduled to be commissioned in 2025. In parallel, Carbios is rolling out its technology internationally through licensing agreements.

The environmental benefits of biorecycling developed by Carbios

Recent life-cycle analyses¹ show a 57% reduction in CO₂ emissions compared with the production of virgin plastic², and for every tonne of recycled PET produced, 1.3 tonnes of petrol are avoided. Compared with conventional recycling, enzymatic recycling is 4 times more circular (calculated according to the [Ellen MacArthur Foundation's Material Circularity Indicator](#)). Thanks to its highly selective enzyme, optimized for efficient PET degradation, Carbios' depolymerization process can process all types of PET waste, including colored, multilayer or textile waste that cannot be recycled using current technologies. Furthermore, the two monomers produced (PTA and MEG) make it possible to recreate recycled PET products of identical quality to virgin ones, and suitable for food contact.

¹ Database ecoinvent 3.8

² French scenario, taking into account the detour of 50% of PET waste from conventional end-of-life. Virgin PET: 2.53 kg CO₂/kg (cradle to gate)

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About Carbios:

Carbios is a biotech company developing and industrializing biological solutions to reinvent the life cycle of plastic and textiles. Inspired by nature, Carbios develops enzyme-based processes to break down plastic with a mission to avoid plastic and textile pollution, and accelerate the transition to a circular economy. Its two disruptive technologies for the biorecycling of PET and the biodegradation of PLA are reaching industrial and commercial scale. Its biorecycling demonstration plant has been operational since 2021 and a first industrial plant, in partnership with Indorama Ventures, is due to be commissioned in 2025. Carbios has received scientific recognition, notably with the cover of Nature, and is supported by prestigious brands in the cosmetics, Food & Beverage and apparel industries to enhance their products' recyclability and circularity. Nestlé Waters, PepsiCo and Suntory Beverage & Food Europe are members of a packaging consortium founded by Carbios and L'Oréal. On, Patagonia, PUMA, PVH Corp. and Salomon collaborate with Carbios in a textile consortium.

Visit www.carbios.com/en to find out more about biotechnology powering plastic and textile circularity.

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Information on Carbios shares:



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