

## NENU2PHAR: PHA-Based Materials from Micro-Algae for High-Volume Consumer Products

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**Abstract :** NENU2PHAR (GA 887474) is an EU-funded project aimed at the development of polyhydroxyalkanoates (PHAs) from micro-algae. These biobased and biodegradable polymers are being tested and validated in different high-volume market applications including food packaging, cosmetic packaging, 3D printing filaments, agro-textiles and medical devices, counting on the support of key players like Danone, BEL Group, Sofradim or IFG. At the moment the project has achieved to produce PHAs from micro-algae with a cumulated yield around 17%, i.e. 1 kg PHAs produced from 5.8 kg micro-algae biomass, which in turn capture 11 kg CO<sub>2</sub> for growing up. These algae-based plastics can therefore offer the same environmental benefits than current bio-based plastics (reduction of greenhouse gas emissions and fossil resource depletion), using a 3rd generation biomass feedstock that avoids the competition with food and the environmental impacts of agricultural practices. The project is also dealing with other sustainability aspects like the ecodesign and life cycle assessment of the plastic products targeted, considering not only the use of the biobased plastics but also many other ecodesign strategies. This paper will present the main progresses and results achieved to date in the project.

**Keywords :** NENU2PHAR, Polyhydroxyalkanoates, micro-algae, biopolymer, ecodesign, life cycle assessment

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