



ALMA MATER STUDIORUM
UNIVERSITÀ DI BOLOGNA

BIO-BASED PRODUCTS AND PROCESSES

*Innovative processes for obtaining
new and drop-in bio-based products
from renewable sources.*



The research of the University of Bologna covers a wide range of issues:

Renewable sources

Characterization, sorting, treatment and valorization of residual biomasses; Sustainable agronomy and eco-physiology of new crops for energy biofuels and bio-refineries, marginal land valorization; Microalgae cultivation and characterization for biotech and bio-based market application; CO₂ capture and transformation.

Processing

New catalytic processes to transform renewables or urban waste; Pre-treatment and integration with cascading exploitation processes for biotech applications; thermochemical processes; Downstream processing for selective recovery of bio-based chemicals; Chemical modification/functionalization of bio-based molecules for polymers, plastics, additives for plastic formulation; Innovative monomers and macromolecular structures synthesis for bio-based and/or biodegradable plastics development; Chemical recycling of traditional polymeric materials for polymers production; LCA modelling, risk assessment, environmental footprint, Material Circularity Indicator.

Products

Chemical platforms and building blocks; Innovative bio-based biopolymers, bioplastics and sustainable composite materials; Biomethane and biofuels from farm and agri-industrial residues; Characterization of different biological activities for pharmaceutical, nutraceutical, food, feed and cosmetic applications; Labelled and certified novel bio-based products; Bio-based additives for plastics and bioplastics.

HIGHLIGHTS

Horizon 2020: [**INGREEN**](#) - *Production of functional innovative ingredients from paper and agro-food side-streams through sustainable and efficient tailor-made biotechnological processes for food, feed, pharma and cosmetics;* [**BIO-PLASTICS EUROPE**](#) - *Developing and Implementing Sustainability-Based Solutions for Bio-Based Plastic Production and Use to Preserve Land and Sea Environmental Quality in Europe;* [**PRESERVE**](#) - *High performance sustainable bio-based packaging with tailored end of life and upcycled secondary use;* [**FIRST2RUN**](#) - *Flagship Demonstration of an integrated bio-refinery for dry crops sustainable exploitation towards bio-based materials production;* **PROLIFIC** - *Integrated cascades of PROCesses for the extraction and valorisation of proteins and bioactive molecules from Legumes, Fungi and Coffee agro-industrial side streams.*