

Bioplastics upcycling loop (BioPolyCycle)

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BioPolyCycle aims to develop bio-upcycling technologies for current bioplastics to produce novel advanced bio-based and biodegradable materials for food packaging and other applications. Our upcycling approach encompasses utilization and conversion of commercially available bioplastic (e.g. currently marketed polylactide (PLA), polycaprolactone (PCL) and polyhydroxyalkanoates (PHA)) to carbon rich feedstocks to be used for biotechnological production of raw biopolymers (such as PHA and bacterial cellulose – BC). Simultaneously, efficient biocatalysts will be developed to be integrated into new biomaterials for increased degradability. Thus, bioplastics will be upcycled into new materials or products of better quality and better environmental value, ensuring that micro-plastics are avoided. This will also allow the sustainable recycling or biological degradation of produced materials.