

Abstract for presentation at Renewable Materials Conference 2026

Title:	Mechanical recycling of PLA based food packaging
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The market uptake of biobased plastic materials for food packaging applications is currently constrained by its incompatibility with existing recycling systems. Today, plastics are only recycled when they are reliably sorted. Sorting facilities prioritize materials that represent a sufficiently large share of the waste stream. Emerging biobased plastics such as PLA lack the necessary market volume to be sorted cost-effectively and are therefore often classified as non-recyclable. This “recycling lock-in” for non-conventional materials is further reinforced under the newly implemented European Packaging and Packaging Waste Regulation (PPWR).

The European Innovation Action project **PROSPER** (<https://prosperbioplastics.eu/>) aims to break this lock-in by demonstrating that biobased plastics can indeed be efficiently sorted and mechanically recycled into high-quality food packaging.

This presentation highlights the consortium’s achievements in proving the technical and economic feasibility of PLA recycling. First, we demonstrate that PLA-based food packaging can be separated from post-consumer waste streams with high sensitivity and yield. Second, the sorted PLA is mechanically recycled with industrially relevant methods into high-quality recycled PLA pellets, from which new PLA trays were produced without compromising its performance. Finally, we discuss under which conditions the impact of PLA on the existing PET recycling processes can be minimized and that dedicated sorting and recycling of PLA becomes cost-effective at market shares as low as ~2.5%.

Together, these results underscore the potential of PLA to meaningfully contribute to a future in which fossil-free plastic packaging is the norm rather than the exception.