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 food packaging is currently constrained by its incompatibility with established recycling systems. Today, plastics are only recycled when they can be reliably sorted, and sorting infrastructures 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 cleaned and reprocessed through industrially relevant methods into high-quality food trays without compromising product performance. Finally, we show that PLA has only a minimal impact on existing PET recycling processes 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.