Session	Alternative and Unconventional Feedstocks
Title	BioWachs - From Agricultural Sidestreams to Functional Waxes via Enzymatic Esterification
Company	Institute of Technical Biocatalysis (TUHH) x Traceless Materials GmbH
Speaker	Katrin Süring
Keywords feedstock (max 2)	Grain Residues
Keywords technology (max 2)	Enzymatic Esterification
Keywords End-Product (max 2)	Biobased Waxes

Abstract:

The global wax market remains 85% fossil-based, relying on paraffin derived from petroleum refining. At the same time, Europe produces thousands of tons of lipid-rich agricultural residues that remain largely untapped. BioWachs turns this mismatch into opportunity: using enzymatic catalysis, we convert fatty acids from grain byproducts into high-value bio-based wax esters — renewable alternative ingredients for cosmetics, coatings, and lubricants.

Our process replaces harsh chemical synthesis with lipase-catalyzed esterification under mild and solvent-free conditions, reducing energy demand and eliminating toxic catalysts. The technology has been validated at laboratory scale, demonstrating high esterification yields and robustness toward unrefined, real world feedstock. BioWachs is a collaboration between the Institute of Technical Biocatalysis (Hamburg Technical University) and traceless materials GmbH, a TUHH spin-off that produces home-compostable biopolymers from agricultural byproducts, creating strong synergies in circular use of bioresources.

We are now seeking partners and pilot-scale infrastructure to advance to TRL 5–6 and evaluate market-ready wax formulations. By bridging academic innovation and industrial implementation, BioWachs aims to establish a sustainable European wax platform, transforming agricultural side streams into climate-neutral, circular specialty products — one biocatalytic reaction at a time.