

"Process Intensification for Resource and Energy Efficiency in Biorefineries"

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Abstract :

Process intensification is a cornerstone for future technology development, driving resource and energy efficiency while optimizing chemical processing towards sustainability. To support precisely these developments, AEE INTEC in Gleisdorf advances emerging technologies from lab scale to industrial applications. The upcoming session will provide insights to selected case studies and will feature technology examples such as the continuously operated oscillatory flow reactor (COFR) used for upgrading of lignocellulosic biomass through saccharification or extraction at unparalleled solid loadings with minimized energy demand for mixing and limited plant footprint. Membrane distillation (MD) will be covered as an energy efficient means for recovering fresh water from process water, concentrating valuable dissolved species, or selectively isolating ammonia from nitrogen-rich waste streams. Lastly, our newest member in the reactor toolkit, the solar reactor, shall be touched upon as it integrates a tubular design with solar energy collectors, that can be utilized for photocatalytic conversions powered by sunlight. The accompanying case studies will highlight strategies for eco-efficient production from secondary raw material streams.