

PROCESS AND PLANT DESIGN IN BIOREFINING

The research group Process and Plant Design in Biorefining focuses on developing innovative biomass-based processes and transitioning them from laboratory concepts towards profitable commercial plants.

Using biomass instead of oil, preferably in combination with renewable electricity, introduces opportunities for greener processes that can benefit the local economy and result in new business opportunities.

The aim is to develop innovative ideas that lead to commercial solutions while providing insights into the feasibility and sustainability of production methods or products when implemented at full production scale. In addition to laboratory work and piloting, the research group uses software tools to simulate and optimize full-scale processes and to estimate their cost-effects.



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FOCUS AREAS

Biomass Valorization

Developing new and improved ways to convert biomass into high-value materials, such as textile fibers, graphene and lignin-based resins.

Process development and scale-up

Using both basic research to investigate phenomena in novel processes and applied research to develop new green technologies from laboratory towards commercial scale processes. The group scales up technologies, develops new methods and analyzes their technological and economic feasibility using process simulation and calculations at every development stage.

Electrification of biomass-based processes

Minimizing the reliance on combustion by electrical heating and harnessing electricity to produce green hydrogen for applications such as methanol production.

Alternatives to fossil-based materials and unsustainable textile fibers

Investigating and developing high-performing alternatives to oil-derived plastic packaging and cotton-based fibers that outperform.