

# PyroCycling

Nährstoffrecycling durch Bioreststoff-Pyrolyse – Reaktionswege von Nähr- und Wertstoffen und Produktoptimierung

<b>Programm / Ausschreibung</b>	FORPA, Forschungspartnerschaften NATS/Ö-Fonds, FORPA OEF2020	<b>Status</b>	abgeschlossen
<b>Projektstart</b>	01.01.2022	<b>Projektende</b>	31.08.2024
<b>Zeitraum</b>	2022 - 2024	<b>Projektlaufzeit</b>	32 Monate
<b>Keywords</b>	bioresidues, intermediate pyrolysis, elemental recovery		

## Projektbeschreibung

The cascading use of biogenic raw materials is a key requirement in terms of efficient and resource-saving biomass utilization. Residual material is available at the end of each usage path, which can be used for energy production or added to value through recycling or upcycling processes. Such residues may contain valuable elements, the recovery of which is of interest from both an economic and an ecological point of view. In thermochemical conversion processes, in addition to the energetic use of the residual materials, such elements can be concentrated or converted. At the same time, undesired elements or pollutants could also be removed via “waste fractions”. The residues or products resulting from incineration, gasification or pyrolysis could already be used as such or fed as an intermediate product for further processing or refining. The basic requirement in this regard is detailed knowledge about the chemistry of these products as a basis to concentrate the highest possible element loads and most favorable compounds in the respective product fraction.

The aim of the project is to investigate reaction pathways of selected elements (in particular phosphorus, potassium, nitrogen and heavy metals) during intermediate pyrolysis of biomass materials. In this regard it is important to identify relevant influencing variables – both on the raw material and process side – that decide on the release or type of integration. The main challenge is to derive generally applicable knowledge and options for action from individual findings from previous studies, supplemented by own research results, which enable the targeted control of transformation processes. In particular, they are

- Generally applicable and systematic description of basic reactions for certain classes of raw materials
- Possibilities for targeted influence on product properties
- Indices and guide values for the technological implementation of laboratory results

The knowledge gained is evaluated in validation tests on a pilot plant.

## Projektpartner

- BEST - Bioenergy and Sustainable Technologies GmbH