



## Biocatalytic synthesis of acrylonitrile from renewable raw materials (BiPAN)



### Joint FNR-funded research project of Dralon GmbH and Enzymicals AG

Biocatalytic produced acrylonitrile is of great industrial interest to the "CO<sub>2</sub> footprint" of polyacrylonitrile (PAN) fiber production. To address this, the main component for the production of PAN fibers, acrylonitrile, will be completely synthesized from renewable resources.

The objective of this project is to investigate whether renewable raw materials can serve as a starting point for competitive biocatalyzed polyacrylonitrile (PAN) fibers / recursors and to identify "green alternatives" to petroleum-based production routes.

For this purpose, acrylonitrile (ACN) is to be produced from biomass at several stages. The starting material is bioethanol from biomass. This is converted into acrylonitrile in several synthesis steps. For this, established classical chemical reactions are combined with a new biocatalytic pathway. Thus, this route would enable the production of biobased acrylonitrile.

Enzymicals AG will establish the biocatalytic synthesis step, scale it up, demonstrate and characterize it (subproject: establishment of the synthesis route).

Dralon GmbH will investigate the polymerization of biocatalytically prepared acrylonitrile. Then this polyacrylonitrile is spun into fibers so as to evaluate its suitability for producing biobased PAN fibers. (Subprojects: polymerization).

The development of an innovative conversion method based on glucose as a renewable raw material, positioned the overall project as a research, development and piloting project in the area of the use of renewable raw materials. This project is funded by the Specialized Agency for Renewable Raw Materials (FNR) until March 2019, FKZ 22020315 and 22013616.