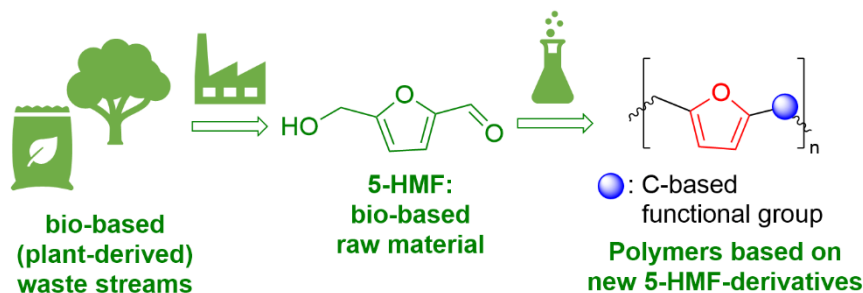


## 5-HMF biopolymers

### Structurally new 5-HMF-based monomers for plastics manufacturing

#### Invention

This invention from Bielefeld University involves polymers containing furan, monomer precursors for manufacturing such polymers, and manufacturing procedures for both the polymers and the precursors. The 5-HMF derivatives have such substituents as hydroxymethyl, aldehyde, and cyano and can also be further derivatized. These compounds also serve as monomers for such substances as biodegradable polyester, polyamides, polyamines, and polyurethanes.



#### Commercial Opportunities

Given the urgency of avoiding the environmental problems associated with conventional polymers, environmentally friendly manufacturing processes are enjoying increasing popularity. The last few years have seen a number of attempts to replace the oil-based polymers that have so far been used in industry and daily life with alternatives based on renewable raw materials. One promising alternative is biopolymers that contain furan, since an important starting material for these polymers, 5-hydroxymethylfurfural (5-HMF), can be manufactured from vegetable carbohydrates. 5-HMF can be made from D-fructose, which in turn can be made from biomasses such as the cheap, readily available vegetable waste streams. Potential areas of application for the new 5-HMF-based polymers include composite materials, foams, organic adhesives, textile materials, and coating materials, especially paints and lacquers. Since precursors upon which these polymers are structurally based have so far not been described in the literature, there are many opportunities for IP associated with patent protection for substance for the relevant target products.

#### Current Status

A patent application has been submitted to the German Patent and Trade Mark Office. A PCT application can be submitted within the priority year. We are offering interested companies the opportunity to license and refine the technology in collaboration with the inventors from Bielefeld University.

#### Relevant Publications

The studies have not yet been published.

An invention from Bielefeld University.

#### Competitive Advantages

- Simple synthesis
- Sustainable chemistry
- Environmentally friendly products
- "tunable" properties

#### Technology Readiness Level

1 2 3 4 **5** 6 7 8 9

Technology validated in relevant environment

#### Industries

- Chemistry
- Coatings industry
- Adhesives industry
- Plastics
- Environment

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