Press Release

Environmentally friendly lubricant additives from renewable raw materials

Four partners are developing a bio-based alternative for thickening and binding agents in lubricants

Munich, 19th February 2020 – In the "PHAt" project, the Federal Ministry of Education and Research has been funding a consortium of four partners with around 1.25 million euros since October 2017. The experts from industry and science are developing sustainable thickeners and binders for the lubricant industry using bio-based raw materials from microorganisms. Arriving in the final year of the project, several application tests already reveal considerable results.

Lubricants are used to reduce friction and wear in machines. They can also contribute to cooling, are used as sealants or protect against corrosion. Solid film lubricants are also used in a wide variety of applications, for example in screw connections, seat belt buckles or hinges, but also on door panels, cover panels or leather seats in cars to prevent noise such as squeaking and creaking during driving. The special property of solid film lubricants is that they form a thin, dry sliding layer that reduces friction and wear on abutting surfaces. To ensure that lubricants in general provide optimum performance in a wide range of applications, additives such as thickeners or binders are added to them. However, these are still usually petroleum-based.

The partners in the "PHAt" project are developing environmentally compatible thickeners and binders based on a substance class of naturally occurring biopolymers, so-called polyhydroxyalkanoates (PHA). The PHA originate from special microorganisms that produce these molecules as storage material. After many optimization steps in PHA production, the project partners have now reached the threshold of semi-industrial scale production, which in the foreseeable future might even be economically feasible. In a subsequent step, the PHAs will be chemically modified in order to vary and optimize their properties. In several application tests, the project partners have now shown that the modified PHA have a good thickening and crosslinking effect.

Project coordinator Dr. Inna Bretz from Fraunhofer UMSICHT explains: "Since the results are quite positive, we are already planning to continue our cooperation after the end of the funding period".

In addition to the research institute Fraunhofer UMSICHT, Fritzmeier Umwelttechnik GmbH & CO. KG performs the biotechnological production of PHA and UnaveraChemLab GmbH runs the chemical PHA modification. The major company FUCHS Schmierstoffe GmbH is testing, in cooperation with FUCHS LUBRITECH GmbH, the application of the new thickeners and binders in lubricants and bonded coatings and intends to eventually market them.

The project will be presented at the Biolubricant Conference of the Fachagentur Nachwachsende Rohstoffe e.V. in Braunschweig on 17th and 18th June 2020. The project partners receive funding of approximately 1.25 million euros for three years from the Federal Ministry of Education and Research as part of the "Tailor-made biobased ingredients for a competitive bio-economy" funding measure. The project was initiated within the "BioPlastik" cooperation network, which is managed by IBB Netzwerk GmbH.

Image:

The goal of the PHAt project is to develop environmentally compatible thickeners and binders for lubricants and solid film lubricants. Credit: © FUCHS Schmierstoffe GmbH

The „PHAt“ project

The PHAt project aims at the investigation of new natural and preferably biodegradable raw materials for use in technical lubricants and solid film lubricants. Especially, the project focusses on the development of environmentally friendly thickeners. The research consortium comprises expertise from industry and academia. They address the question whether potentially biodegradable polymers based on nature-derived material, so called polyhydroxyalkanoates (PHA), are suitable as thickeners. Thus, they can be used as an alternative to petroleum-based products in the future. The project is being funded by the Federal Ministry of Education and Research with approx. 1.25 million euros for three years. https://phat-projekt.de/en.

Project partners: Fraunhofer UMSICHT, Fritzmeier Umwelttechnik GmbH & Co. KG, FUCHS SCHMIERSTOFFE GmbH in cooperation with FUCHS LUBRITECH GmbH, UnaveraChemLab GmbH

Industrielle Biotechnologie Bayern Netzwerk GmbH

The Industrielle Biotechnologie Bayern Netzwerk GmbH (IBB Netzwerk GmbH) is a network and service organization in the field of industrial biotechnology and sustainable economics. The aim is to catalyze the implementation of valuable scientific knowledge in these fields into innovative, marketable products as well as processes. As a subcontractor, IBB Netzwerk GmbH is responsible for the dissemination of the results of the project. This is achieved by a project website, updates in social media, newsletters and press releases. Furthermore, the organization of project meetings is supported. The company is located in Munich. Further information can be found at: https://www.ibbnetzwerk-gmbh.com/en

About the "BioPlastik" cooperation network

Food packaging, carrier bags, toys or functional textiles - all these products typically contain fossil-based plastics. These can only be broken down very poorly in nature. The residues accumulate as unwanted and environmentally harmful or harmful plastic waste, e.g. in the sea. The partners of the "BioPlastik" cooperation network have therefore set themselves the task of carrying out technical projects for the development of innovative, biobased, degradable and at the same time inexpensive biopolymers. Materials made from bioplastics - in particular materials made from polyhydroxyalkanoates (PHA), which have so far been little marketed - are expected to gain significant market shares in mass products. In addition, the partners have high sustainability criteria for the production of the biopolymers and the materials themselves.

Initiator and management of the "BioPlastik" cooperation network is IBB Netzwerk GmbH. The collaboration of the partners in the cooperation network was funded from January 2014 to December 2016 within the framework of the BMWi's Central Innovation Programme for SMEs (ZIM). The nationwide funding programme is open to technologies and industries and supports medium-sized companies as well as partners from science. At the beginning of 2017, "BioPlastik" perpetuates through the partners' own contributions. Further information at www.netzwerk-bioplastik.de.

Press contact:
Industrielle Biotechnologie Bayern Netzwerk GmbH
Katrin Härtling-Tindl
Fürstenrieder Strasse 279a
81377 München
Phone: +49 89 74 120-375
Fax: +49 89 74 120-378
E-Mail: katrin.haertling@ibbnetzwerk-gmbh.com
Web: www.ibbnetzwerk-gmbh.com

Project coordination:
Dr. Inna Bretz
Fraunhofer- Institut für Umwelt-, Sicherheits- und Energietechnik UMSICHT
Osterfelder Straße 3
46047 Oberhausen
Phone: +49 (0)208 8598 1313
Fax: +49 (0)208 8598 1289
E-Mail: inna.bretz@umsicht.fraunhofer.de