

High Performance Bio-based Functional Coatings for Wood and Decorative Applications (PerfeCoat)

Technical University of Munich



Amélie Skopp¹, Yajing Liu¹, Broder Rühmann¹, Volker Sieber^{1,2,3,4}

¹Chair of Chemistry of Biogenic resources, Technical University of Munich, Campus for Biotechnology and Sustainability, 94315 Straubing, Germany

²Fraunhofer IGB, Branch BioCat, 94315 Straubing, Germany

³Catalysis research center, Technical University of Munich, 85748 Garching, Germany

⁴The University of Queensland, School of Chemistry and Molecular Biosciences, 68 Copper Road, St. Lucia 4072, Australia

Introduction

The pursuit of a climate-neutral Europe and a truly circular economy requires attention to virtually all fields of production if fossil-based materials are to be eliminated. This relates not only to manufactured goods but also the paints and coatings used to protect them; of the almost 1 million tonnes of paints and coatings produced in Europe each year, more than 80% are derived from fossil resources. Reducing the impact of these coatings would represent a major advance in Europe's climate ambitions. To address this challenge, the PERFECOAT project will develop and validate a new generation of industrial wood and decorative coatings with significantly more than 25% bio-based components. The project will address three important markets for coatings: high-volume, UV-curable clear coatings, waterborne trim paints for do-it-yourself (DIY), and waterborne wall paints. These coatings will reach, and even surpass, the current quality and sustainability standards.

Project parameters



PERFECOAT will be able to offer bio-based coating ingredients from climate neutral sources and processes.

Consortium



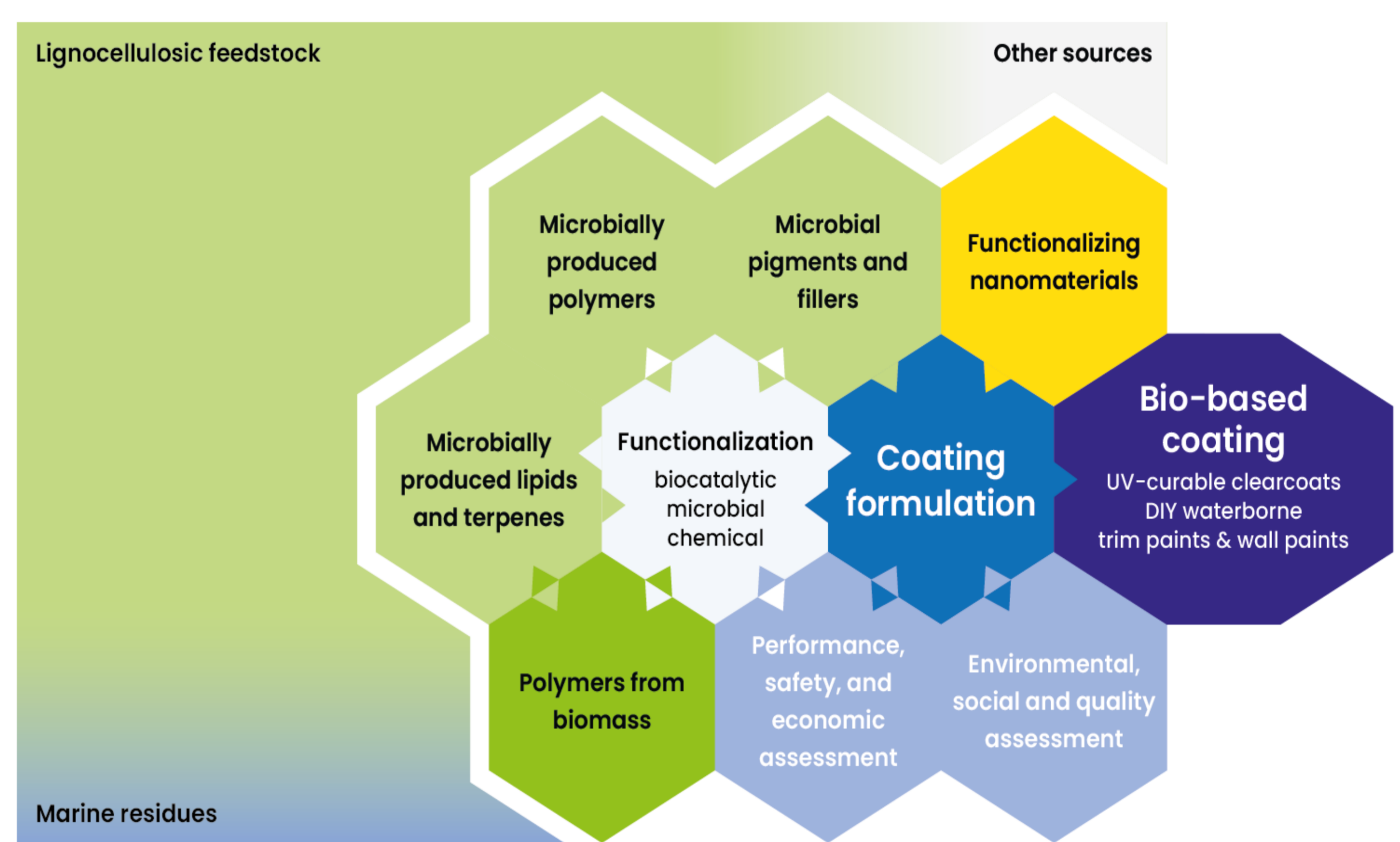
Objectives

The overarching objective of the PERFECOAT project is to develop novel sustainable coatings that will ultimately be available to the public. Within this, the project will pursue a number of specific objectives.

- From an environmental perspective, the PERFECOAT project will contribute to reducing Europe's greenhouse gas emissions by developing new industrial bio-based coatings for wood with more than 25% of bio-based components produced from climate neutral sources and processes.
- From an economic perspective, the PERFECOAT project will help to prepare the coating market for new formulations performing at least equally to existing fossil-based products.
- From a social perspective, the project will demonstrate the potential for creating new job opportunities in the bio-based sector in rural and coastal areas, where urban migration remains a challenge.

In addition, the project will enhance European leadership in the biotechnology sector and strengthen the EU's leadership in adopting renewables.

Modular approach of PerfeCoat



Functionalization of microbial macromolecules to polymers and microbial pigments and biomass will enable replacement of significant percentages of fossil-based raw materials in decorative DIY paints and wood coatings.

Impact

The PERFECOAT project aims at delivering a number of impacts that will contribute to the wider goals of the BBI JU. These will include:

- Creating a new cross-sectoral connection in the bioeconomy, linking the industrial biotechnology sector and the wood and decorative coatings sector.
- Establishing a value chain platform, integrating several value chains that deliver more sustainable ingredients for bio-based coatings. This will bring together several economic sectors and bio-based economy actors.
- Demonstrating new consumer products based on bio-based chemicals. These will be in the form of binder and additive materials as well as innovative bio-based coatings.
- Validating an improved processing technology reflecting a Technology Readiness Level (TRL) gain in various products. The technology will move from TRL 2 to 4 at the project's start and from TRL 4 to 5 at its end.

Funding



This project receives funding from the Bio Based Industries Joint Undertaking (JU) under the European Union's Horizon 2020 research and innovation programme under grant agreement No 101022370. The JU receives support from the European Union's Horizon 2020 research and innovation programme and the Bio-based Industries Consortium.