
Cellulose nanofibrils in wood coatings

Researchers in this project are studying to what extent cellulose nanofibrils – long, very thin fibres – can improve the usability and quality of wood coatings.

Background

Wood coatings used in the exteriors of buildings must be sufficiently weatherproof and optically pleasing. Environmental influences such as light rays, dampness, hail or microorganisms damage the coating and sooner or later cause it fail. Transparent and semi-transparent systems, in particular, are not durable enough and frequently need to be replaced, incurring high costs. Thanks to their good mechanical properties and other advantages, e.g. transparency, cellulose nanofibrils could offer new possibilities for improving the quality of wood coating systems.

Aim

The aim of the project is to test the suitability of cellulose nanofibrils as functional components in wood coatings. The focus will be on the following questions: Can cellulose nanofibrils improve the mechanical properties of the coating? Can they take on the role of a carrier substance for selected agents? Organic biocides or nanomaterials such as metal oxides, for example, can be attached as agents to the fibril network. As a result, these agents could be better distributed and more reliably embedded in the coating matrix. The researchers select the most promising variants of cellulose nanofibrils, include them in different formulations and test the properties of the coating in view of its new functionality.

Significance

The research project will provide new insights on the potential use, suitability and function of pure or modified cellulose nanofibrils in wood coatings. The successful application of cellulose nanofibrils can improve the usability and durability of coatings. This would lead to longer renovation cycles, cut costs and reduce negative environmental impacts.

Title of project: Modified nanofibrillated cellulose in wood coatings

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