

## **Water-bonding and sorption enthalpy in nanoporous biopolymer composites**

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Transport phenomena and material behavior of porous biopolymer composites like wood are mainly influenced by the water sorption and the chemical structure of the material. Information in this field provides possibilities for a better usage of lignocellulosic materials in classical construction, actual modification and high advanced products.

The structure of such biopolymer composites like wood is not understood completely yet. Circumstances in different analytical fields are caused by the absence or the presence of water. Especially bound water which does not freeze but is reasonable for the swelling and shrinking of the material is one main problem. Actual theories indicate a tightly bound interaction of the water to the OH-groups of the material as main reason for the behavior of this water type.

The Poster will focus on past and actual research results regarding the understanding of the porous structures of wood and bound water as well as own actual research in this field. These investigations are going on to explain the relationship between the change of mechanical properties at different moisture contents and the chemical structure of the materials. This is done by studying the thermodynamically behavior and the porosity of the materials with different experimental methods.