〈総　　説〉

木を溶かしてつくるフィルムによる木材、セラミック、金属などへの自己融着コーティング
第Ⅲ報：バイオマスフィルムコーティングの疎水化機構

Self-Adhesive Coating of Wood, Ceramics, and Metals Using Films Produced by Solubilizing Wood
Part Ⅲ: Mechanism of Hydrophobicity Formation in Biomass Film Coatings

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Abstract

Hydrophobicity development of biomass film coatings produced from the formic acid solubilization of Eucalyptus wood and Japanese cedar bark was examined. Surface roughness and surface free energy (SFE) were evaluated for Japanese beech wood, single-layer Eucalyptus films, single-layer Japanese cedar bark films, and double-layer Japanese cedar bark/Eucalyptus films coating. Eucalyptus films exhibited exceptionally smooth surfaces, whereas bark-containing coatings showed slightly higher roughness and markedly reduced SFE due to the non-polar extractives. To clarify the contribution of bark lipids, lipid extracts were incorporated into Eucalyptus films. The water contact angle increased from 89° to 108–114°, accompanied by roughened surface morphology and ester-related FTIR bands, indicating thermally induced network reconstruction between lipids and lignocellulosic components.

キーワード：木材、木材の可溶化、バイオマスフィルム、熱圧着プロセス、コーティング
Keywords: Wood, Wood solubilization, Biomass film, Thermopressing, Coating

2026年5月22日受付
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