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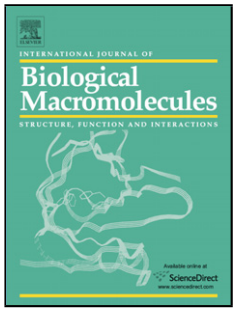

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Authors: Wanpeng Zhou, Hui Zhang, Fangeng Chen

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Modified Lignin: Preparation and Use in Reversible Gel via Diels-Alder Reaction

Wanpeng Zhou, Hui Zhang, Fangeng Chen*

State Key Laboratory of Pulp and Paper Engineering, South China University of Technology, Guangzhou 510640, Guangdong, China

*Corresponding author, Tel.: +86-20-22236559 E-mail: fgchen@scut.edu.cn

Highlights

- A lignin-based reversible gel was prepared via Diels-Alder reaction
- A new method was adopted to prepare modified lignin
- Provide a route to prepare lignin-based self-healing material

Abstract

In this study, popular soda lignin was modified with either furan or maleimide ring, and the modified lignins were subjected to reversible Diels−Alder reaction. A new process was proposed to prepare the functionalized lignin. A long chain was introduced to the hydroxyl groups of lignin, and then either the furan or maleimide ring was added to the other end of the chain. The test results confirmed that either the furan ring or the maleimide ring was bound to lignin. Furan- and maleimide-functionalized lignins were also combined to generate crosslinking via Diels–Alder [4+2] cycloaddition reaction.

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