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Dissolution Mechanism of Cellulose in Quaternary Ammonium Hydroxide: Revisiting through Molecular Interactions

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Research Highlight:

- Rapid cellulose dissolution is achieved in quaternary ammonium hydroxide (QAH);
- The effect of QA⁺ cationic structure on the cellulose dissolution is discussed;
- Kamlet-Taft parameters presenting hydrogen bond properties of QAH are compared;
- Molecular interactions in QAH-cellulose system are revealed by 1D/2D NMR analysis;
- A supposed mechanism of cellulose dissolution in QAH solution is proposed.

Abstract

Quaternary ammonium hydroxide (QAH) solution has been used to dissolve cellulose and made great progress in recent years. While, its cellulose dissolution mechanism is still unclear. Here, series of QAH with varied cationic alkyl chains were chosen for

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