



Pseudo-lignin Isolation and Preliminary Characterization

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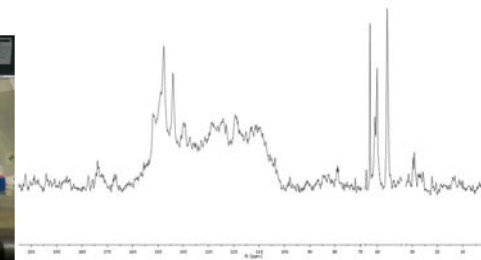


PROGRAM DESCRIPTION

- Pseudo-lignin is defined as aromatic material that yields a positive Klason lignin value and that is not derived from native lignin.
- This research has demonstrated that pseudo-lignin can be generated solely from carbohydrates without significant contribution from lignin during dilute acid pretreatment.
- This thesis contributes to said acquisition of knowledge by
 - ❖ Providing characterization of extracted pseudo-lignin from pretreated poplar holocellulose and cellulose;
 - ❖ Proposing possible pseudo-lignin generation mechanisms and providing pretreatment conditions that significantly suppress pseudo-lignin generation;
 - ❖ Investigating pseudo-lignin/enzyme interaction.

TECHNICAL DETAILS

- Pseudo-lignin extraction by dioxane/water from dilute acid pretreated poplar holocellulose and cellulose at different pretreatment conditions
- Molecular weight analysis of pseudo-lignin by GPC
- Characterization of pseudo-lignin by liquid ^{13}C NMR, and solid-state CP/MAS ^{13}C NMR
- Sugar yield comparison by HPLC

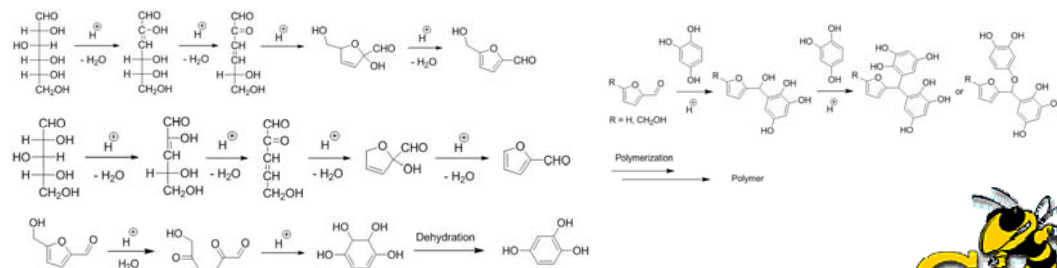


PAYOFF

- The characterization of pseudo-lignin will be helpful to understand its chemical structure and chemical origin.
- Proposed mechanism will provide possible pretreatment conditions to suppress pseudo-lignin generation during dilute acid pretreatment.
- Investigation of pseudo-lignin/enzyme interaction will be significant for enzymatic deconstruction of cellulose and the determination of pretreatment conditions.

KEY ACCOMPLISHMENTS

- Pseudo-lignin extraction
- Molecular weight analysis of pseudo-lignin
- Qualitative liquid ^{13}C NMR characterization of pseudo-lignin
- Proposed pseudo-lignin formation mechanism



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