

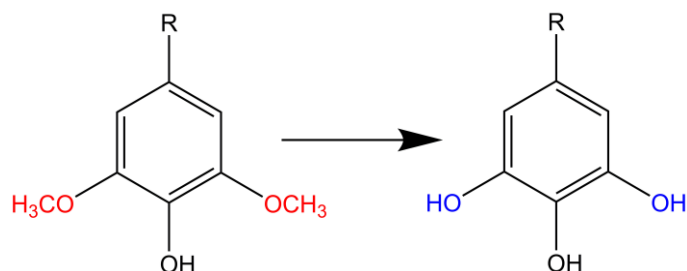
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|---|---|
| <input type="checkbox"/> Bachelorarbeit                   | <input type="checkbox"/> theoretisch              |
| <input type="checkbox"/> Konstruktionsübung               | <input checked="" type="checkbox"/> experimentell |
| <input checked="" type="checkbox"/> bezahlte Masterarbeit | <input checked="" type="checkbox"/> konstruktiv   |

**December 2021**

## Thema: **Continuous Demethylation of Lignin**

Lignin from Kraft black liquor is one of the most underused biobased material. Although its vast availability, the large-scale utilization in higher priced applications is not given yet. Because of the chemical structure, lignin is regarded as the largest sustainable recourse of aromatic compounds. On the other hand, the reactivity of lignin is hindered which is mostly caused by the blocking of reactive sites by methoxyl groups. Hence, the chemical modification of lignin by demethylation is a promising process to increase its reactivity. This would allow the implementation of lignin as phenol substitute in resins or other reactive applications and is a major step to increase the degree of raw material utilization of wood in the pulp and paper industry. In a previous project, demethylation by thermal treatment of black liquor was investigated. Not only the successful modification, but also several other impacts on the black liquor properties and following lignin isolation process were observed. To improve the homogeneity of the produced lignin, the modification step shall be switched from batch operation to a continuous process. Therefore, a reactor setup consisting of a plug flow reactor, product cooler and product phase separation needs to be installed.

The thesis covers the set-up and commissioning of the reactor which will be run with industrial black liquor samples to modify the contained lignin. After modification, the lignin will then be separated by precipitation and filtration according to industry standards. The thesis offers the possibility to work in a research project together with industrial partners.



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**Anfangstermin:** ab sofort