

Depolymerization of Kraft-Lignin avoiding coke-formation by radical scavengers

Gottfried Aufischer^{a,b}, Raphaela Süss^{a,b}, Birgit Kamm^a, and Christian Paulik^b

^aWood K plus - Competence Center for Wood Composites & Wood Chemistry,
4040 Linz, Austria

^bInstitute for Chemical Technology of Organic Materials, 4040 Linz, Austria

Lignin is a main component of inedible plant biomass and the second most abundant polymer found in nature. About 50 million tons of lignin accumulate every year as a side product in paper industry. Particularly, Kraft-lignin is readily available since the Kraft process is the most commonly used pulping technique. Nevertheless, only a small fraction of the lignin is utilized as material, the bigger part is burnt for energy recovery [1].

Though, due to its phenolic structure lignin can be converted into numerous chemicals. For this purpose various depolymerization procedures have been applied to lignin. Especially, hydrothermal depolymerization methods are common since they are based on aqueous systems. In order to prevent unwanted coke-formation the use of catalysts, solvents or additives has been applied [2].

In this work Kraft-lignin was depolymerized hydrothermally investigating radical scavengers to prevent the formation of coke.

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- [1] R. Rinaldi, R. Jastrzebski, M.T. Clough, J. Ralph, M. Kennema, P.C.A. Bruijnincx, B.M. Weckhuysen, Wege zur Verwertung von Lignin: Fortschritte in der Biotechnik, der Bioraffination und der Katalyse, *Angew. Chem.* 128 (29) (2016) 8296–8354.
- [2] A. Agarwal, M. Rana, J.-H. Park, Advancement in technologies for the depolymerization of lignin, *Fuel Processing Technology* 181 (2018) 115–132.