

Characterization and depolymerization of concentrated sulfuric acid hydrolysis lignin

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Lignin utilization has long been considered very important for the sustainability and commercial viability of lignocellulosic biomass refineries. Lignin is an amorphous, highly branched and complex phenyl propane biopolymer. Its structure suggests that it can be a rich source of aromatic phenols. However, lignin is the most stable and difficult to depolymerize among the three major biopolymers in lignocellulosic biomass by concentrated sulfuric acid hydrolysis. Hydrogenolysis in presence of active hydrogen donors like formic acid has been proposed as effective method for lignin to liquid conversion in recent literatures. Here, we report the characterization and depolymerization of concentrated sulfuric acid hydrolysis lignin. Hard wood oak lignin generated from hydrolysis with different concentration and hydrolysis time were characterized using gravimetric and FTIR analysis. Depolymerization was performed using high pressure autoclave reactors. The effect of reaction parameters and solvents on the depolymerization was studied. Depolymerization products were characterized by gravimetric methods, FTIR and GC-MS.