

Pyrolysis of lignin acquired by two-step acid treatment of lignocellulosic biomass

Robertus Dhimas Dhewangga Putra, 서동진, 김창수*

KIST

(mizzou333@kist.re.kr*)

Lignin which was obtained from two-step acid treatment of lignocellulosic biomass was pyrolyzed. Pyrolysis was conducted with micro-pyrolyser and connected with gas chromatograph coupled with mass spectrometry. Dependence of lignin depolymerization on the pyrolysis conditions such as temperature and duration under inert environment was investigated. Guaiacols and Syringols products were found largely at 600°C, while the largest amount of phenol was found at 700°C and 200s duration. Product distribution showed that maximum degradation of lignin occurred at the temperature of 600°C. Moreover, the same alkyl side chain in phenol and guaiacol has found in fast duration pyrolysis; therefore, it can be considered that phenol was formed by methoxy chain cleavage of guaiacol. Comparative study on pyrolysis of various lignin isolation methods such as two-step acid treatment, Kraft and Kraft lignin with low sulfonate content was conducted.