# Catalytic depolymerization of organosolv lignin to aromatic hydrocarbons by hydrogenation

김민선, 하정명†, 최재욱, 서동진
한국과학기술연구원
(jmha@kist.re.kr†)

Lignin is a natural amorphous and three-dimensional complex branched polymer composed of phenolic monomers. Lignin is regarded as a potential sustainable resource for production both aromatic fuels and chemicals. Therefore, it is necessary to develop efficient route to convert lignin into aromatic monomer compounds. In addition, catalytic chemical depolymerization of lignin under mild conditions may be more useful to reduce the process cost. The depolymerization of lignin using supported Ru catalysts was performed to produce lignin fragments. The aromatic small-molecule hydrocarbon products were identified and quantified using GC/MS and GC-FID, which demonstrated that upto 32.01% of aromatic monomers were obtained on the supported Ru catalyst. The amount of small-molecule hydrocarbons was dependent on the amount of solid lignin residue indicating that the more active depolymerization process produced the more hydrocarbon fuels. The polymerization activity was assessed by weighing the polymeric products of lignin residue and observing their GPC results. The polymeric lignin residue was further observed with 1H, 13C, 31P-NMR and 1H-13C correlation HSQC NMR.