

Effects of  $\text{Na}_2\text{CO}_3/\text{ZrO}_2$  base catalyst on the hydrolysis of phenethyl phenyl ether (PPE) in near critical water condition

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Lignin is uneatable biomass and large amounts of lignin are produced by the lignocellulosics biomass-to-ethanol process and pulp & paper refineries process as waste. Most of it is burned as low-grade fuel. However the aromatic complex chemical structure of lignin suggests that it may be a good source of valuable aromatic chemicals if it could be broken into smaller molecular units. Phenethyl phenyl ether (PPE), model of the  $\beta$ -O-4 linkage prevalent in lignin, was hydrolyzed in near-critical water. The influence of  $\text{Na}_2\text{CO}_3/\text{ZrO}_2$  base catalyst on these reactions was tested from 200 to 400°C reaction temperature. And catalysts were characterized by BET, XRD,  $\text{CO}_2$ -TPD etc. Phenol, styrene and ethyl benzene were mainly produced by hydrolysis reaction of PPE. In presence of  $\text{Na}_2\text{CO}_3/\text{ZrO}_2$  base catalyst, the conversion and products yield increased sharply at the entire temperature range.