

### Thermal decomposition of microcrystalline cellulose in sub- and supercritical organic solvents

Koriakin Anton, 이재혁, 이창하\*

연세대학교

(leech@yonsei.ac.kr\*)

Thermal decomposition of microcrystalline cellulose with sub/supercritical m-xylene, dodecane, 1,4-dioxane, and methanol were studied. In addition, the effects of surface acid catalysts (Si-NSM-SO<sub>3</sub>H and modified activated carbon) and hydrogen on cellulose conversion have been investigated using high pressure and temperature reactor. The composition of liquid products has been analyzed by GS-MS. The applied temperatures were 300°C, 350°C and 400°C in thermal decomposition experiments. The addition of hydrogen led to improving conversion ratio about 4-7% in all the solvents except dodecane. In the case of 1,4-Dioxane, the best conversion ratio showed lower temperature condition, 300°C. In methanol condition, the addition of heterogeneous surface acid catalyst (Si-NSM-SO<sub>3</sub>H) at 300°C led to significant increase in conversion ratio from 58.1% to 87.8%. However, it didn't influence on conversion in aprotic solvents.