

### Biomass Liquefaction in EtOH

Brand Steffen<sup>1,2</sup>, 김재훈<sup>1,2,\*</sup>

<sup>1</sup>KIST; <sup>2</sup>UST

(jaehoonkim@kist.re.kr\*)

A lot of research is done worldwide on the liquefaction of biomass to investigate the best process conditions to achieve high biocrude yield, to investigate the liquefaction mechanism or to clear the impact of different process parameters. To test the influence of the liquefaction solvent (sub-/supercritical ethanol) was of primary interest in this study since in contrast to the hydrothermal liquefaction in water only very few results have been published. Pine sawdust of a particle size < 40 mesh has been liquefied in a 180 ml batch reactor under high initial nitrogen pressure at temperatures between 280 and 400°C. After the product separation all products have been quantified and tested upon their properties. The gas composition were characterized by a RGA-GC. The biocrude was analyzed using GC-MS, elemental analyzer, and TGA. While the solid residue (biochar) analyzed using elemental analyzer, and TGA. The yield show a maximum between 280 and 400°C with values above 60 wt%. With increasing temperature decreases the amount of solid residue and the gas yield increase. From the results can be concluded that the amount and properties of gas, biocrude and solid residue are highly dependant on the temperature. Ethanol can be a promising solvent for the liquefaction of pine sawdust.