Kinetics of biomass pretreatment process using hot compressed water

윤준호, 김대성, 이헌욱, Aye Aye Myint, 이윤우*
서울대학교
(ywlee@snu.ac.kr*)

Nowadays, because of concern about depletion of fossil fuel, alternative sources are demanded, and Biomass can be an alternative renewable resource for the fossil fuel. its complex structure and various components make it hard to use biomass as resources. Thus the pretreatment process in which the structure is simplified and components are separated is required. The aim of this process is to fractionate three major components of biomass (cellulose, hemicellulose, and lignin) to increase the yield of fermentable sugars and prohibit the undesired degradation of products that are strong fermentation inhibitors.

In this work, hot compressed water (HCW) and batch-type reactors were used for the pretreatment of tulip tree. To understand the reaction and to choose the reaction condition, study of kinetics was conducted. Using some assumption, reaction rate equation of pretreatment process was taken. Biomass pretreatment using HCW was conducted at various temperatures and reaction times, and the results were compared to the estimated equation.