Pretreatment efficiency and structural characterization of cornstover by using dilute acid

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Lignocellulosic biomass such as agriculture residues (corn stover, rice straw) and forestry residues (hardwood, softwood) has great potential as a source for sugar production in the biorefinery industry. Cornstover is one of the valuable lignocellulosic materials which are abundant and low cost feedstock in the world. However, the nature structure of lignocellulose such as cornstover is difficult to hydrolyze using only cellulolytic enzymes due to its recalcitrant structure. Thus, pretreatment that increases the porosity of the material to provide the enzyme with easier access to main biomass component. The aim of this study is to propose optimal conditions for the dilute acid pretreatment of corn stover through over a range of conditions encompassing residence times of 1−90min, temperature of 140−190℃, and H_2SO_4 concentrations of 0.25−1.0% (w/w). In addition, the goal of this study is also structural property of pretreatment using surface area, crystallinity, functional group changes as well as SEM microscopy imagery.