

농산부산물의 바이오에너지 전환을 위한 묽은산 전처리

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Dilute Acid Pretreatment for Conversion the Agricultural Residue into Bioenergy

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Abstract : Lignocellulosic biomass is the most abundant organic material on earth and also promising raw material for bioenergy production. Agricultural residues in the process of bio-oil extraction, is an abundant and low-cost lignocellulosic material. The technology for conversion of lignocellulosic biomass resources to fuels and chemicals, such as ethanol, has been under development for decades. One of the well-studied technologies that are currently being commercialized is to use a dilute acid-catalyzed pretreatment followed by enzymatic hydrolysis and fermentation to produce ethanol. In this work, the dilute-acid hydrolysis of agricultural residues was optimized through the utilization of statistical experimental design. Evaluation criteria for optimization of the pretreatment conditions were based on high xylose recovery and low inhibitor contents in the hydrolyzates. The purpose of this study was to gain a more accurate understanding of the quantities of acid required for effective hydrolysis and the reactivity trade-offs with reaction time and temperature that will enable overall process optimization.

Key words : Agricultural Residue(농산부산물), Pretreatment(전처리), Rapeseed straw(유채대), Pepper stem(고추줄기), Barley straw(보릿짚)