

Pretreatment of rice straw with ionic liquids for enhancement of lignocellulose conversion to fermentable sugars

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Pretreatment is prerequisite step to facilitate the production of fermentable sugars from lignocellulose. In this study, rice straw (RS) was pretreated by dissolving in ionic liquid and regenerating by anti-solvent (water). The effects of ionic liquid properties and pretreatment conditions (time, heating condition (conduction heating, microwave heating)) on the extraction of lignin, recovery of cellulose/hemicellulose and the bio-digestibility of regenerated cellulose/hemicellulose were investigated. The results show that the yields of sugars released from ILs pretreated RS were depended on the pretreatment temperature and time. Microwave heating significantly enhanced the bio-digestibility of regenerated RS, reduced the amount of enzyme usage and hydrolysis time in compare with conventional heating.