바이오매스의 화학/생물 전환공정을 통한 플랫폼 바이오화학소재 생산기술 개발

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Tulip saw-dust was pretreated with sub-critical water followed by formic acid or hydrogen peroxide under various conditions and successfully fractionated into three main components of cellulose, hemicellulose and lignin. A new saccharifing enzyme was developed from Paenibacillus sp. in Korea and immobilized on the surface functionalized MCF silica as a carrier. Also, novel ionic-liquids, cellulose solving agents were synthesized to increase the enzymatic hydrolysis efficiency. For commercial production of putrescine, a complex technology was developed as the most suitable strain construction by metabolic engineering with setting the optimum conditions for fermentation and established the best purification system for pilot-scale production. Alternatively, the successful substitution was confirmed and a well-designed program of tri-acetyl cellulose production is under construction with pilot-scale. Also, demonstration of poly-acrylicacid products, bio-carbomer for cosmetic ingredient was conducted by automatic SCF process that contains solvent and residue free, which can promise more safety than the traditional solvent-polymerization products.