

Process design of GC and FAME coproduction for simulation and evaluation

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In this work, the process for the coproduction of GC and FAME was designed for the simulation and the evaluation of process. The process for the coproduction of GC and FAME is consists of five main part, reaction part, enzyme separation part, solvent recovery part, FAME extraction part and GC extraction part. At the reaction part, batch reactor was selected and reaction conditions were 6:1 molar ratio, 60 °C refer to the our previous research. To separate solid phase enzyme, centrifugation process was added. Centrifugated liquid contains FAME, GC, tert-butanol and remained DMC. Firstly, tert-butanol and remained DMC were extracted using a distillation process. tert-butanol and DMC have a low boiling points compared with FAME and GC. FAME was extracted using a liquid-liquid extraction method. Water is selected as an extraction solvent for solubility of FAME and GC mixtures. After the FAME extraction process, GC was extracted using liquid-liquid extraction method. But, chloroform was selected as an solvent instead of water. From this new coproduction process of GC and FAME, process simulation, cost analysis and environmental impact were evaluated.