

Effect of molar ratio about coproduction of FAME and GC

고아라, 성필제, 정홍섭, 김덕기¹, 김용환, 박철환*
광운대학교 화학공학과; ¹GS칼텍스 기술연구소
(chpark@kw.ac.kr*)

Fatty Acid Methyl Esters (FAME) has been produced as renewable energy because of fossil fuel shortage and global warming. FAME and glycerol produced by transesterification of triglyceride using enzyme. A lot of studies has investigated turnover of glycerol as by-product to a high value-added product because of increasing production of biodiesel. Glycerol carbanate (GC) has many available applications which are a source of new polymeric materials, electrolytes, solvents in lithium ion batteries, instead of ethylene and propylene carbonates. Dimethyl carbonate (DMC) could be used instead of alcohol and it has several advantages which are noncorrosive and exhibits good solvent properties. In our previous study, the optimal conditions for the coproduction have been obtained: soybean oil as vegetable oil, 100 g/L of Novozym 435, and 60 °C. In this study, the effect of molar ratio of DMC to soybean oil on the coproduction of FAME and GC investigated. Various molar ratios of DMC to soybean oil were investigated: 1.5:1, 3.0:1, 4.5:1, 6.0:1 and 7.5:1. The trend of conversion of FAME and GC was similar. Conversion increased at molar ratio of 1.5 to 6.0 and decreased over molar ratio 6.0.