Optimization of biodiesel production using supercritical carbon dioxide and statistical analysis

이종호, 권정훈, 태범석[1], 강정원, 김승욱*
고려대학교; [1]한경대학교
(kimsw@korea.ac.kr*)

Biodiesel, one of the alternative fuels, is an ester of fatty acids derived from the transesterification of vegitable or animal oil. Generally, the synthesis of alkyl ester is accomplished by chemical transesterification. But it has some problems, for example, the environmental problem or high energy consumption. In order to overcome the problems, an enzymatic process for the production of biodiesel has been proposed as an alternative route.
The objective of this study is to develop the production of biodiesel using supercritical carbon dioxide and statistical method.
The optimal pressure, temperature and molar ratio of methanol and oil for biodiesel production in supercritical condition were determined to be 136 bar, 46.7 ℃, and 3:1. In these conditions, conversion for biodiesel production was about 58 %.