

Hydrolysis of Soybean Oil in Subcritical Water: Thermal stability of FA and effects of reaction parameters

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Fatty acids (FA) are used as feed stocks for the production of biodiesel and oleochemicals such as lubricant grease, anti-block agent, plastisizer and emulsifier. To generate the FA, the use of subcritical water as both solvent and reactant has recently been proven to be a successful medium for hydrolysis of vegetable oil without catalyst. However, high temperature and pressure of subcritical water can cause polymerization, isomerization, degradation of FA, and accordingly lead to low yield of FA. Therefore, in this study, thermal stability of FA in sub- and supercritical water was investigated under the temperatures (320~400 °C) and pressures (10~25 MPa). Furthermore, the effects of reaction parameters including the molar ratio of water to oil, pressure, temperature, reaction time, and agitation speed on the content of FA were investigated to determine the optimum reaction conditions.