

### Supercritical one-pot process combining transesterification and partial hydrogenation: Development of Cu/SiO<sub>2</sub> catalyst

\_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_<sup>\*</sup>  
(bae5272@hanyang.ac.kr<sup>\*</sup>)

Response surface methodology (RSM) was applied to optimize the catalytic activity and selectivity of Cu/SiO<sub>2</sub> for supercritical one-pot process combining transesterification and partial hydrogenation. By considering two variables including the amount of Cu loading supported on silica and catalyst amount by basis of oil weight, experiments were designed by central composite design (CCD) and were performed under reaction temperature of 320 °C, pressure of 20 MPa, molar ratio of methanol to oil of 45 and time of 30 min to predict the contents of FAME and methyl oleate. The results showed that contents of FAME and methyl oleate were significantly affected by the amounts of Cu loading and catalyst, and they had a negative influence on the responses accompanied with by-product above specific levels of variables. The determined optimum catalyst were the Cu loading of 4.456% and the catalyst amount of 4.6225 wt.%, which give the maximum contents of FAME and methyl oleate.