

### Selective hydrogenation of highly unsaturated biodiesel over Cu/SiO<sub>2</sub> catalyst for improving fuel properties

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In this study, partial hydrogenation of highly unsaturated biodiesel was performed over Cu/SiO<sub>2</sub> catalyst to reduce degree of unsaturation and to enhance fuel qualities. Fresh and used Cu/SiO<sub>2</sub> catalysts were characterized by XRD, SEM, and ICP to reveal the crystal structure, morphology, and leaching of catalyst. The influence of reaction parameters including reaction temperature, time, catalyst amount, hydrogen pressure, and co-solvent was investigated to determine the optimal reaction conditions. Kinetic parameters were determined at the initial stage of reaction to examine the reaction rate of the process.