

Study on the zirconia aerogel catalyst for the production of diesel-blending high-carbon-number ketones from the hexanoic acid

이윤수^{1,2}, 최재욱¹, 서동진¹, 하정명^{1,†}, 이창하²

¹한국과학기술연구원; ²연세대학교

(jmha@kist.re.kr[†])

The ketonization is an efficient method to reduce oxygen content and increase carbon numbers by the condensation of two carboxylic acid molecules which are observed in the biomass pyrolysis oil or prepared by the biological conversion of biomass. In this study, the ketonization of hexanoic acid, obtained from the fermentation of sugars, was performed in order to obtain 6-undecanone which is a possible diesel blend. While reducible metals and bases have been suggested as catalysts, we selected highly dispersed zirconia aerogel as a stable catalyst which has amphoteric nature. In order to understand the catalysis, the zirconia aerogels were observed with NH₃-, CO₂-, and O₂-TPD in addition to the XPS, XRD, and N₂-physisorption.