

## Supporting information:

# Design of a highly active base catalyst through utilizing organic-solvent-treated layered silicate Hiroshima University Silicates

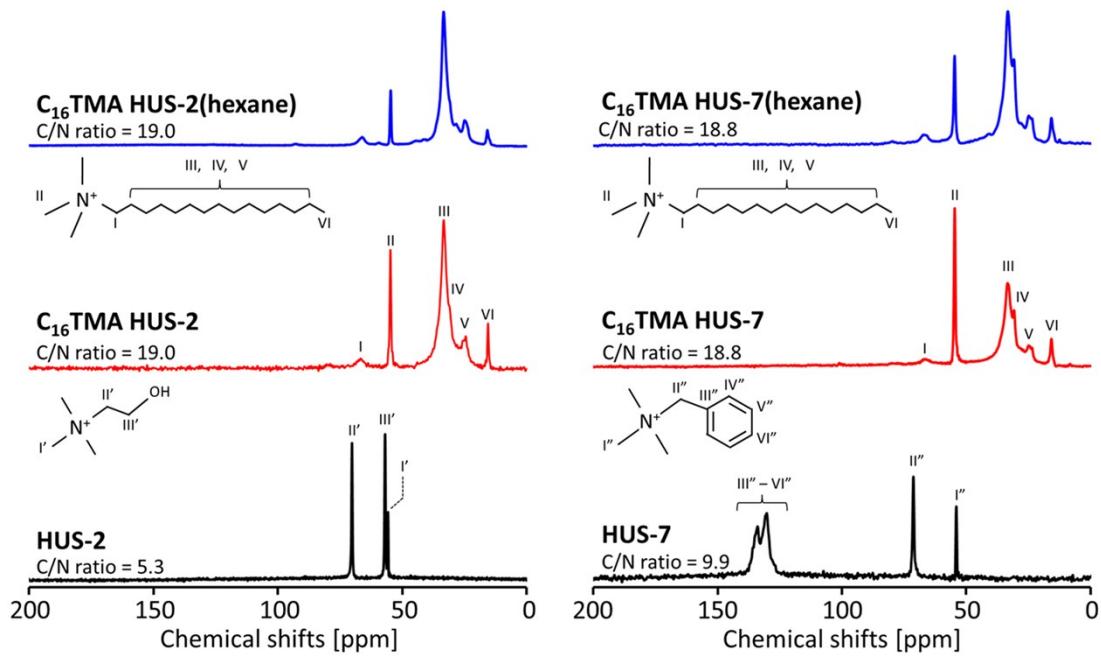
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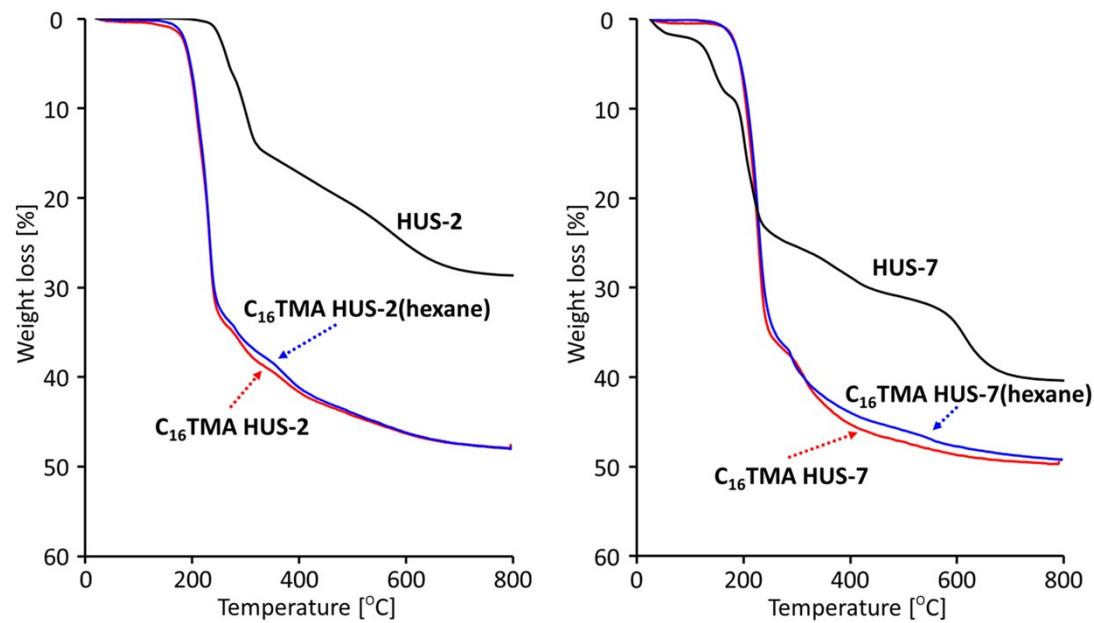
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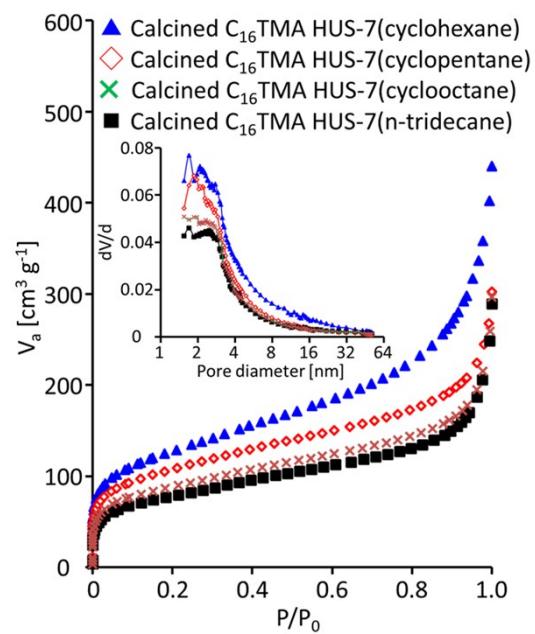
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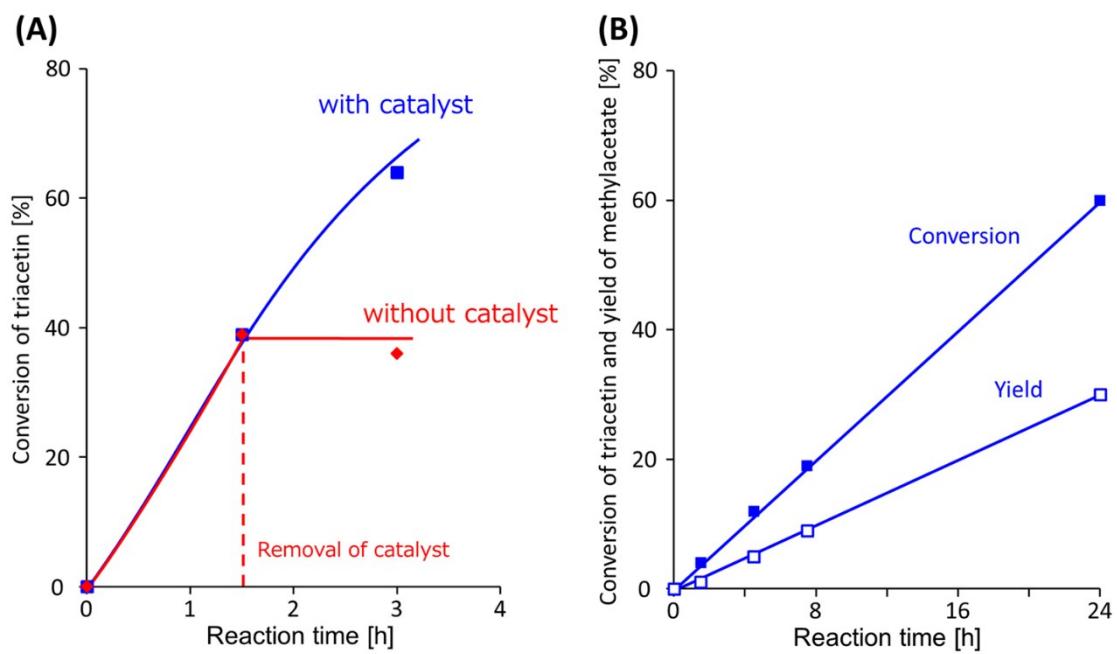
**Figure S1.**  $^{13}\text{C}$  CP MAS spectra of HUS-2,  $\text{C}_{16}\text{TMAHUS-2}$ ,  $\text{C}_{16}\text{TMAHUS-2(hexane)}$ , HUS-7,  $\text{C}_{16}\text{TMAHUS-7}$ , and  $\text{C}_{16}\text{TMAHUS-7(hexane)}$ .



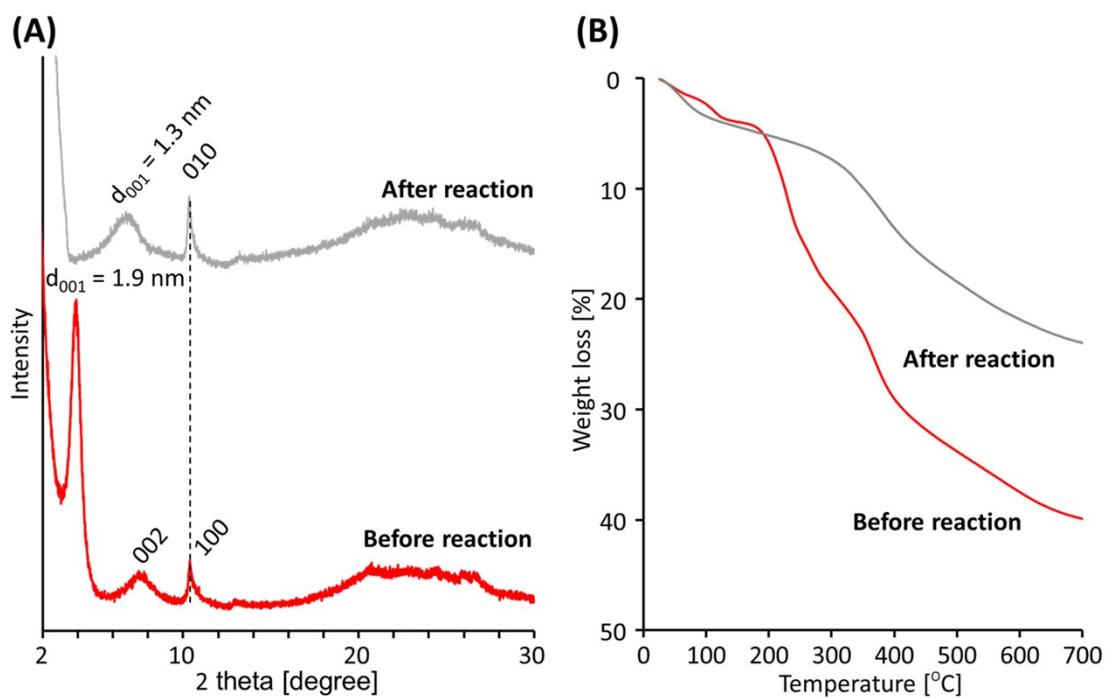
**Figure S2.** TG curves of HUS-2, C<sub>16</sub>TMAHUS-2, C<sub>16</sub>TMAHUS-2(hexane), HUS-7, C<sub>16</sub>TMAHUS-7, and C<sub>16</sub>TMAHUS-7(hexane).



**Figure S3.** N<sub>2</sub> adsorption isotherms and BJH pore size distributions of calcined C<sub>16</sub>TMAHUS-7(hexane) C<sub>16</sub>TMAHUS-7(n-tridecane), C<sub>16</sub>TMAHUS-7(cyclohexane), C<sub>16</sub>TMAHUS-7(cyclopentane), and C<sub>16</sub>TMAHUS-7(cyclooctane)



**Figure S4.** (A) Heterogeneity test of  $\text{NH}_2\text{-C}_{16}\text{TMAHUS-7}$ (cyclohexane) and (B) catalyst performance with increased amounts of reaction components (triacetin (30 g), methanol (65.5 g),  $\text{NH}_2\text{-C}_{16}\text{TMA HUS-7}$ (cyclohexane) (10 mg)).



**Figure S5.** (A) XRD patterns and (B) TG curves of  $\text{NH}_2\text{-C}_{16}\text{TMAHUS-7(cyclohexane)}$  before and after catalytic reaction.