

Electronic Supplementary Material

Formulation of zeolite-mesoporous silica composite catalysts for light olefin production from catalytic cracking

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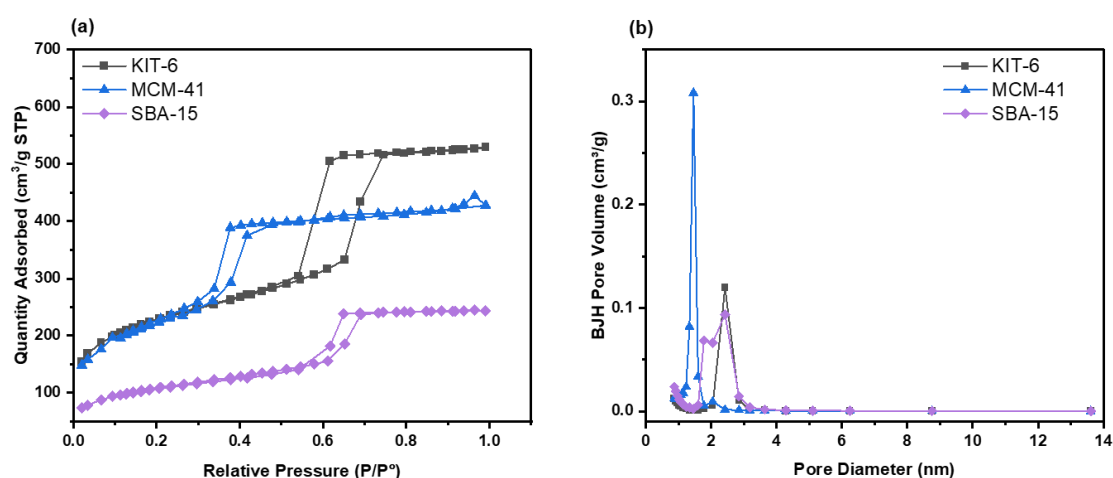


Fig. S1 (a) N₂ adsorption-desorption isotherms of KIT-6, MCM-41 and SBA-15, (b) the associated PSD by the BJH method

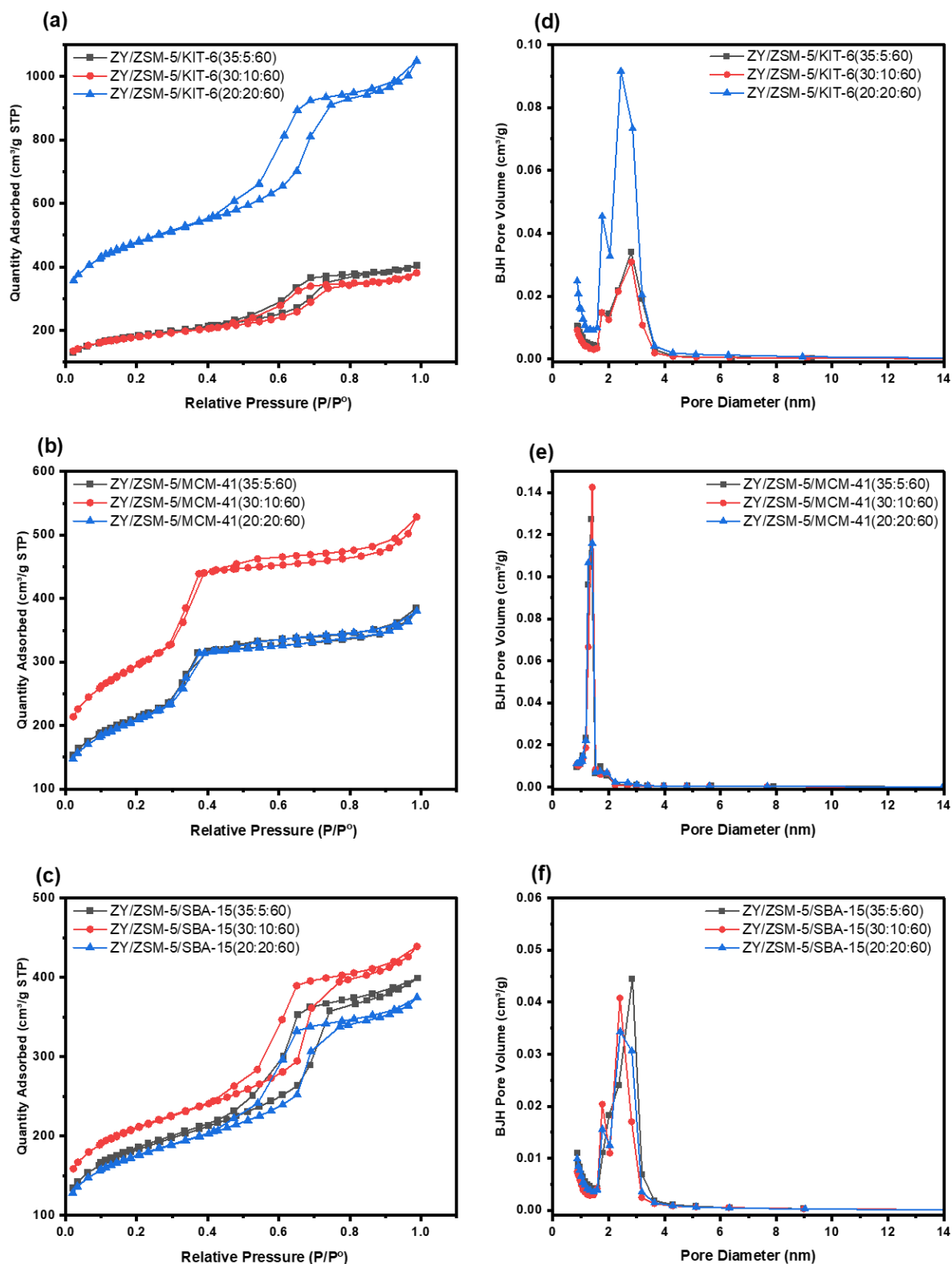


Fig. S2 (a, b, and c) N₂ adsorption-desorption isotherms of the ZY/ZSM-5/KIT-6, ZY/ZSM-5/MCM-41 and ZY/ZSM-5/SBA-15 composites, (d, e, and f) the associated PSD by the BJH method

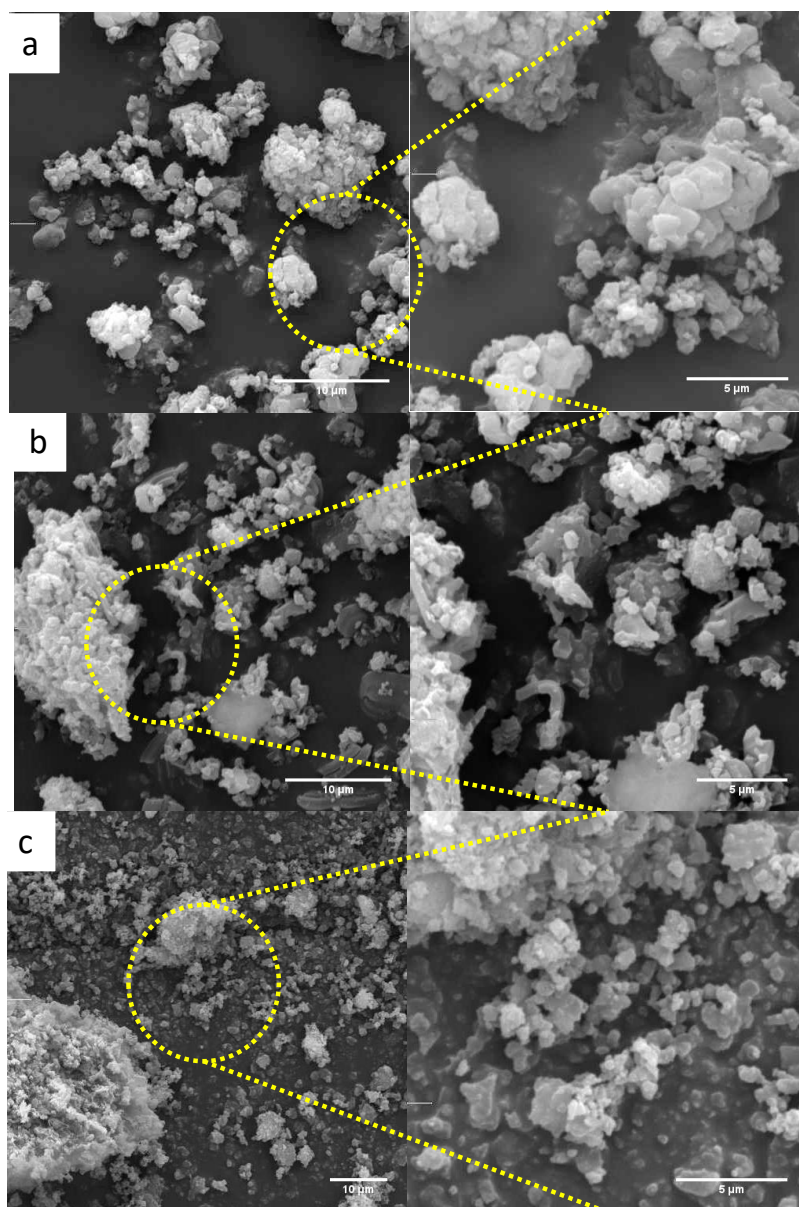


Fig. S3 SEM images of the selected composite catalysts: (a) ZY/ZSM-5/KIT-6(20:20:60), (b) ZY/ZSM-5/SBA-15(20:20:60) and (c) ZY/ZSM-5/MCM-14(20:20:60)

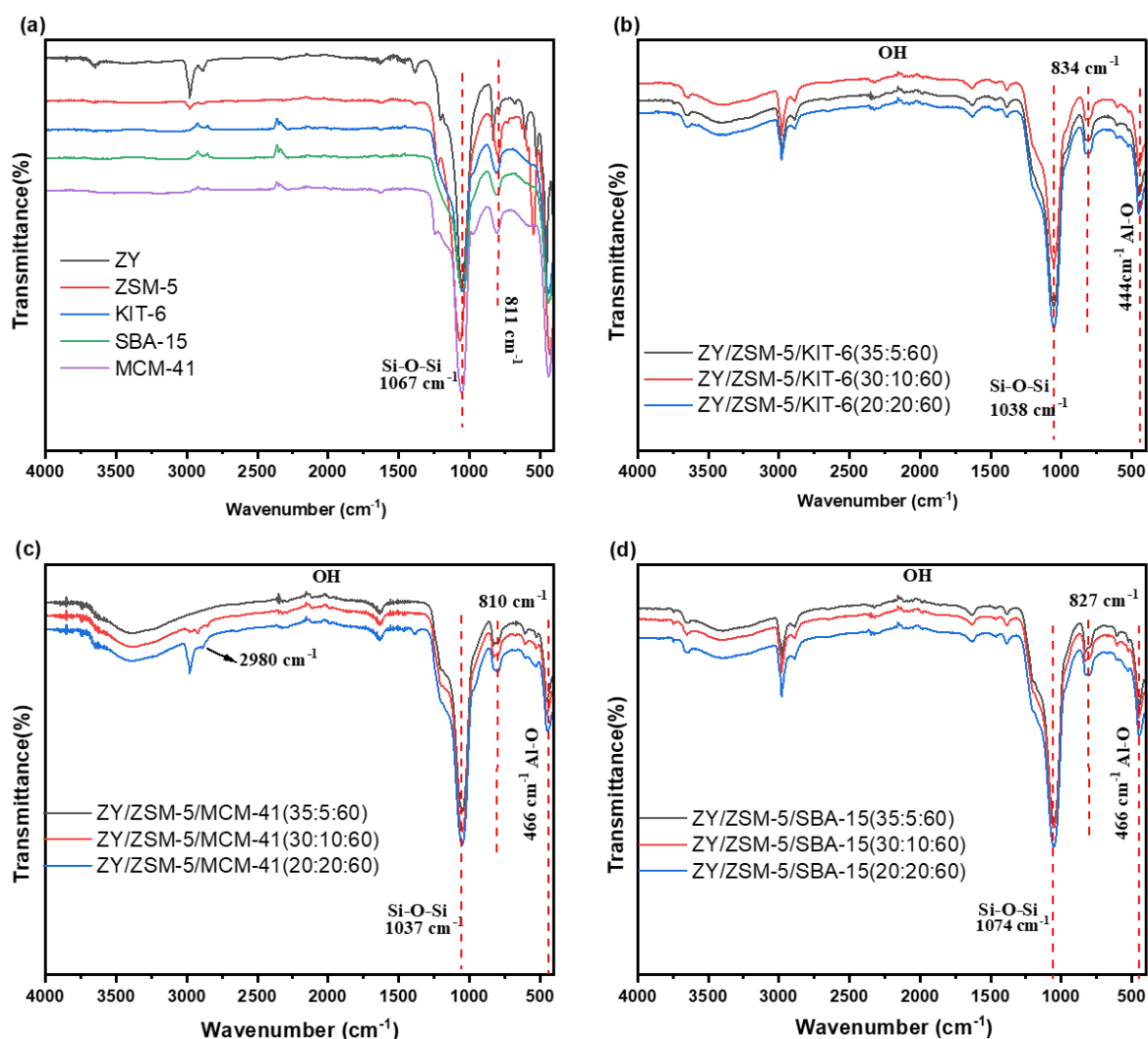


Fig. S4 (a) FTIR spectra for pure zeolites and mesoporous silica, and FTIR spectra of the composite catalysts of (b) ZY/ZSM-5/KIT-6, (c) ZY/ZSM-5/MCM-41 and (d) ZY/ZSM-5/SBA-15

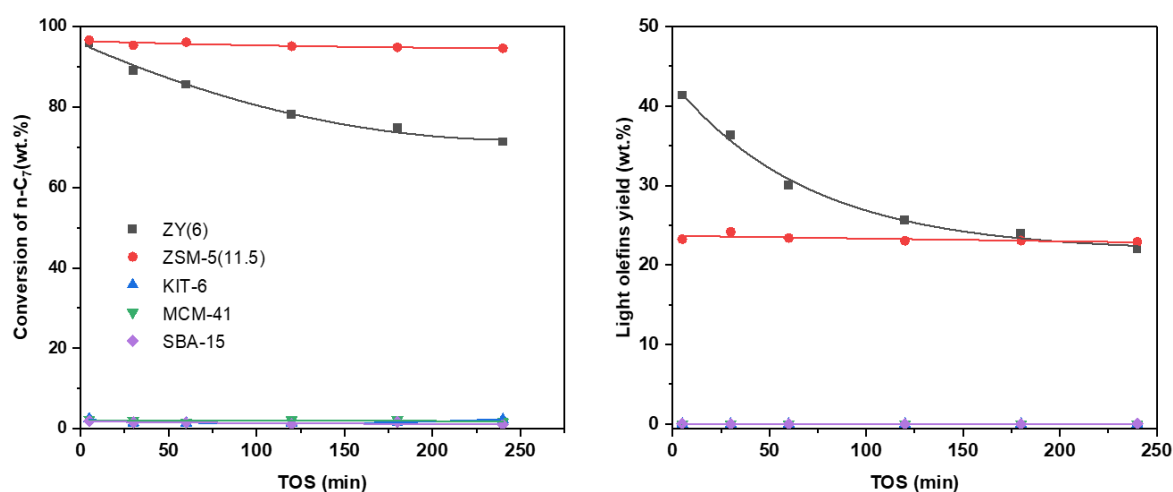


Fig. S5 (a) Conversion of $n\text{-C}_7$ and (b) total yield of LOs over ZY, ZSM-5, KIT-6, SBA-15 and MCM-41 (conditions: $T = 550 \text{ }^\circ\text{C}$, $\text{WHSV} = 0.8 \text{ h}^{-1}$, $\text{ToS} = 4 \text{ h}$, $P = \text{atmospheric pressure}$)

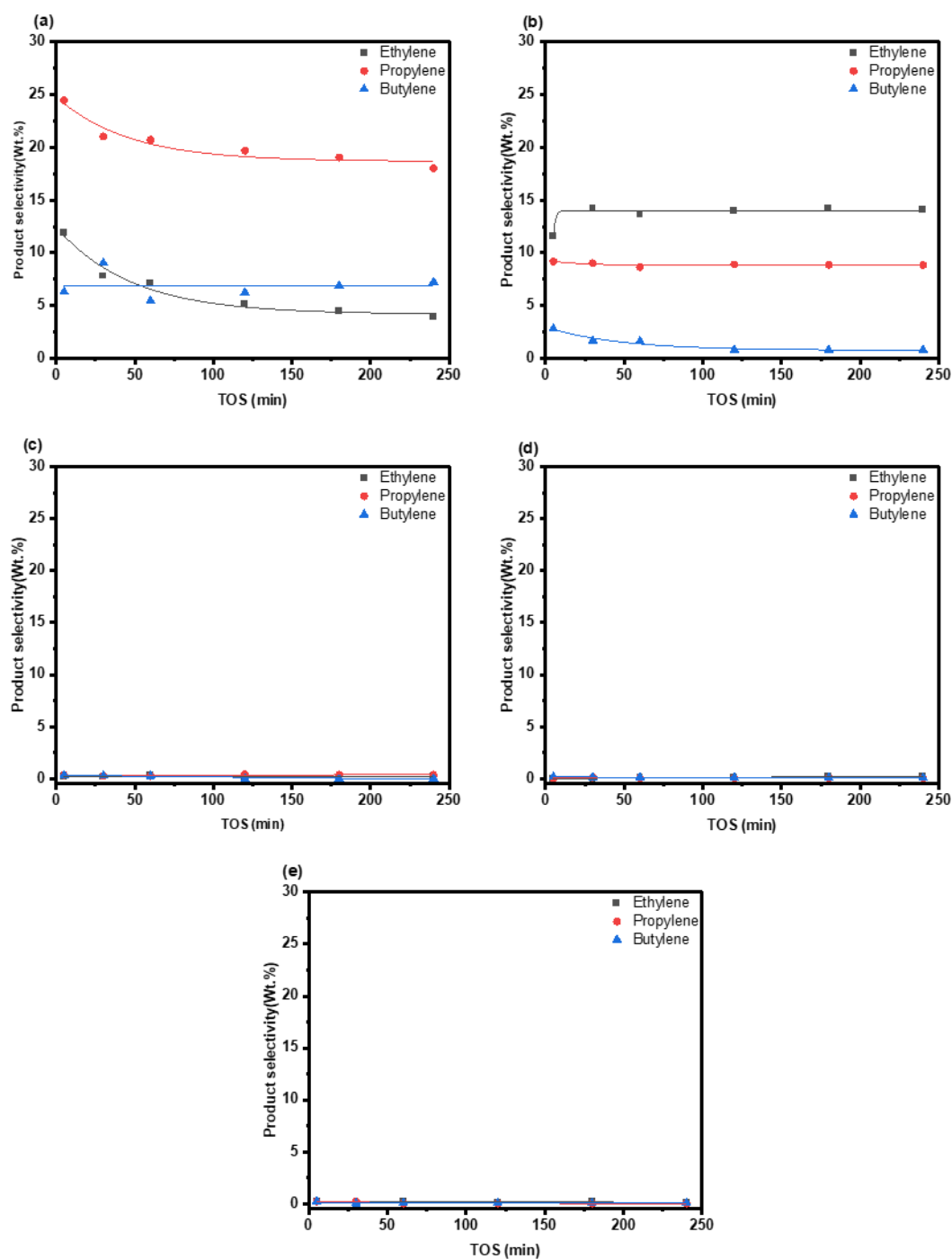


Fig. S6 Product selectivity over (a) ZY, (b) ZSM-5, (c) KIT-6, (d) SBA-15 and (e) MCM-41 (conditions: $T = 550\text{ }^{\circ}\text{C}$, $\text{WHSV} = 0.8\text{ h}^{-1}$, $\text{ToS} = 4\text{ h}$, $P = \text{atmospheric pressure}$)

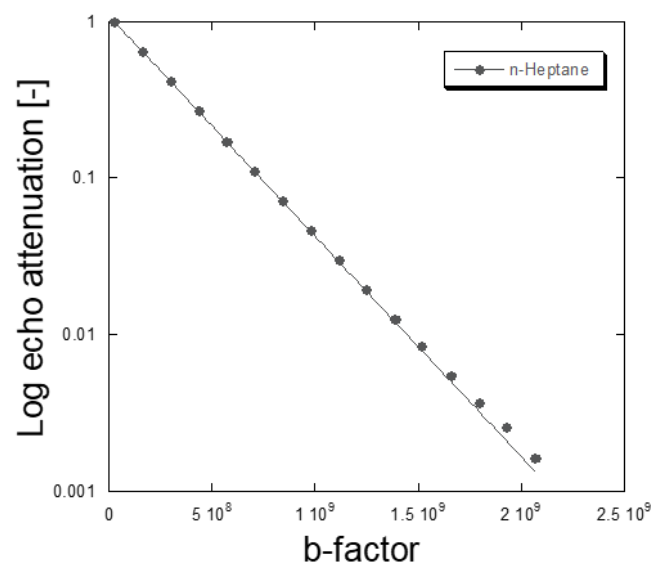


Fig. S7 Log attenuation plot for the free bulk liquid $n\text{-C}_7$ sample