

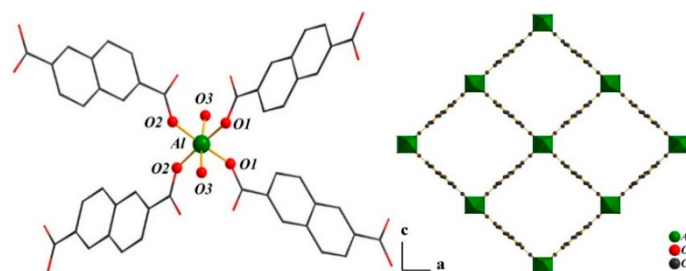
Supporting Information

Microwave-Assisted Synthesis of Aluminium MOFs as Catalysts for Selective Sulfoxidation Reaction

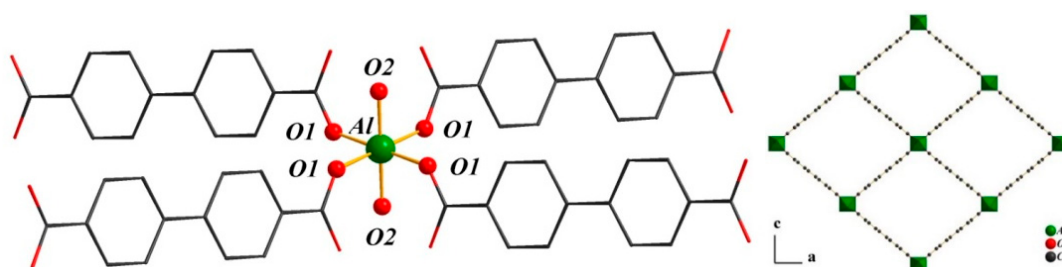
Madhan Vinu, Wei-Cheng Lin, Duraisamy Senthil Raja, Jeng-Liang Han* and Chia-Her Lin*

Department of Chemistry, Chung Yuan Christian University, Chung Li, Taoyuan, Taiwan 32023.

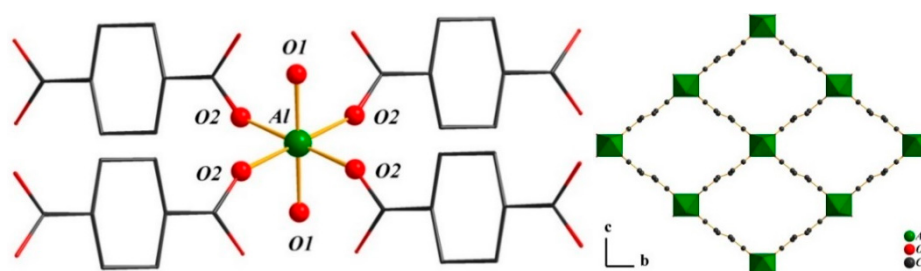
Correspondence: jlhan@cycu.edu.tw (J.-L.H.); chiaher@cycu.edu.tw (C.-H.L.)



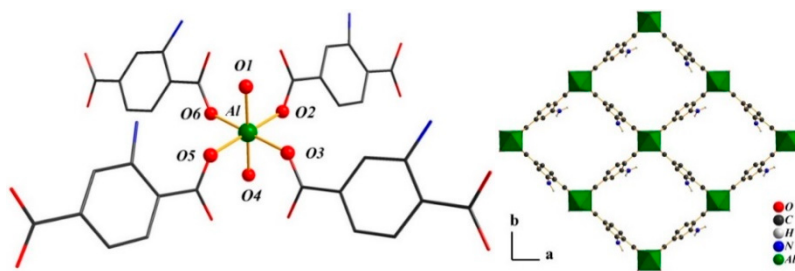
(a)



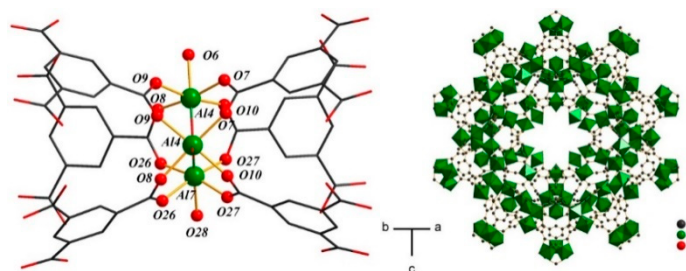
(b)



(c)

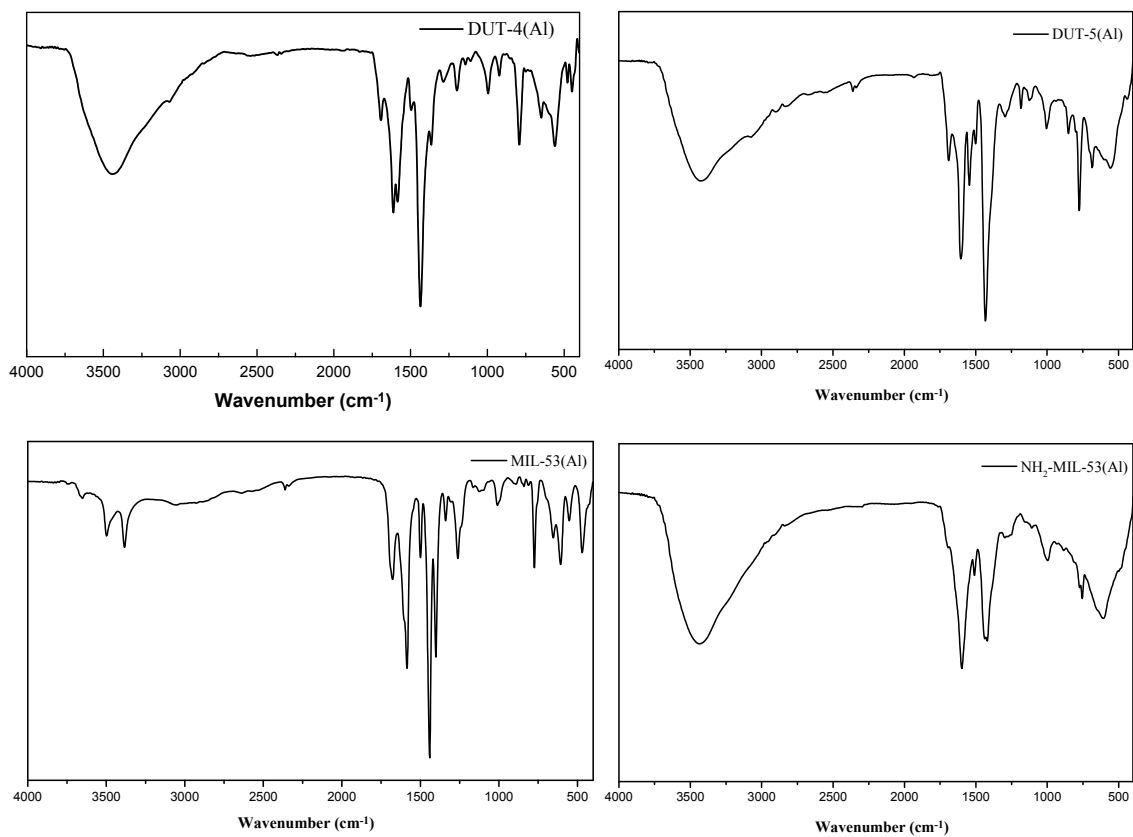


(d)



(e)

Figure S1. The coordination environments of Al atoms (left) and porous structures (right) of (a) DUT-4(Al), (b) DUT-5(Al), (c) MIL-53(Al), (d) NH₂-MIL-53(Al) and (e) MIL-100(Al).



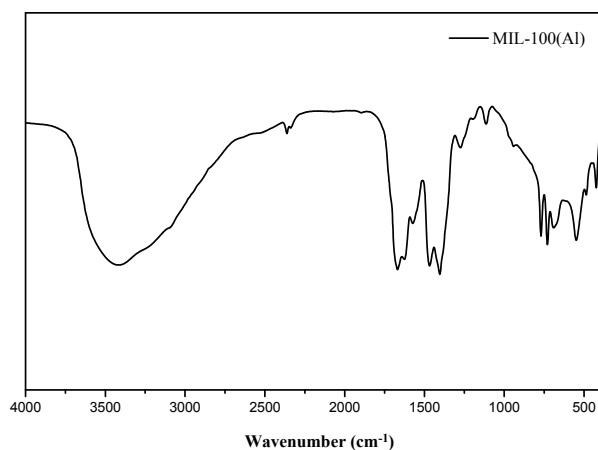


Figure S2. The FT-IR spectra of activated samples of DUT-4(Al), DUT-5(Al), MIL-53(Al), NH₂-MIL-53(Al), and MIL-100(Al).

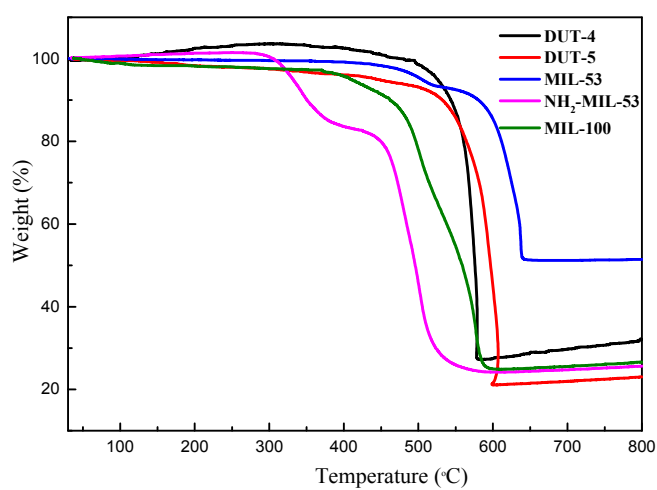


Figure S3. The thermogravimetric analysis curve of activated samples of DUT-4(Al), DUT-5(Al), MIL-53(Al) NH₂-MIL-53(Al) and MIL-100(Al).

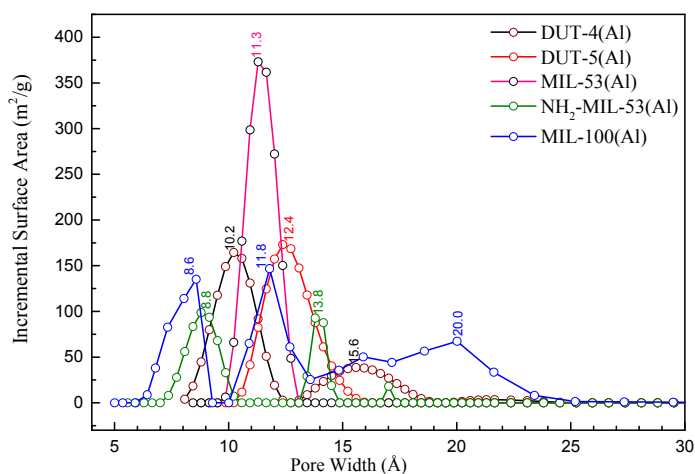


Figure S4. The DFT pore size distribution for DUT-4(Al), DUT-5(Al), MIL-53(Al), NH₂-MIL-53(Al), and MIL-100(Al).

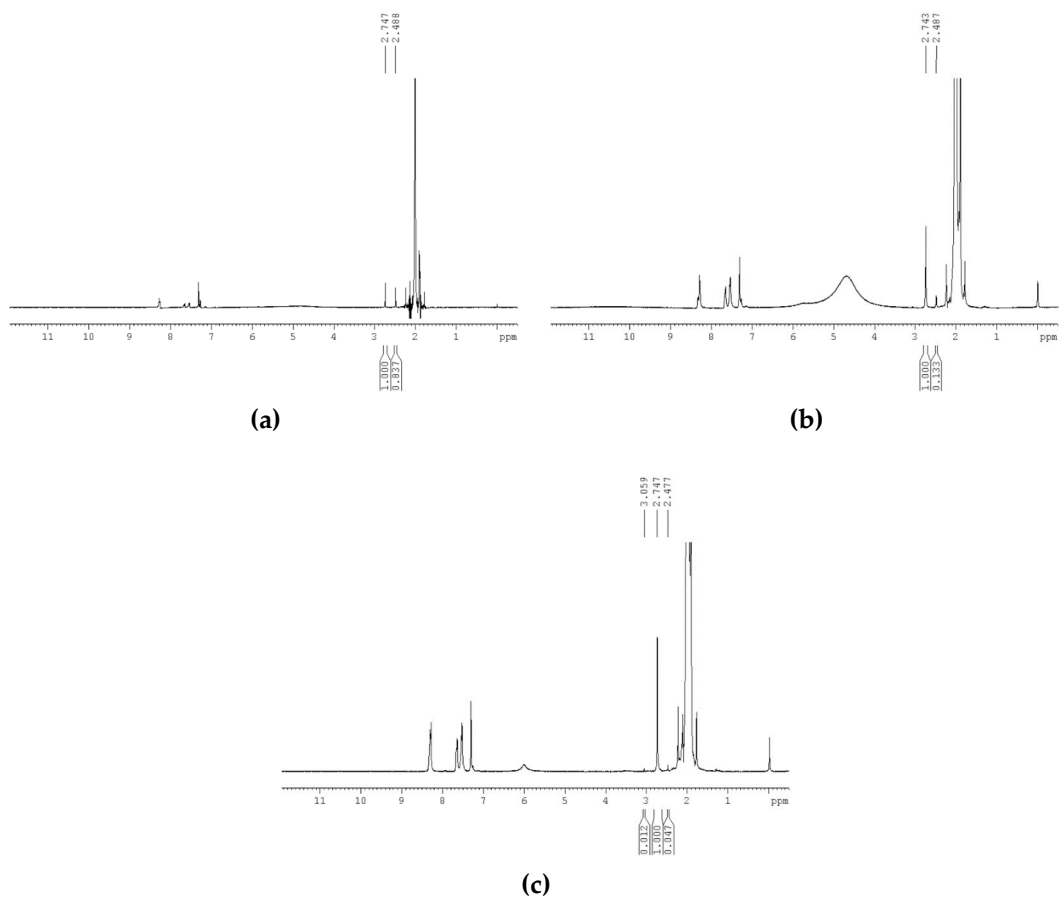


Figure S5. ^1H NMR spectrum of catalytic result for DUT-4(Al) at room temperature for 24 (a), 48 (b) and 72 h (c).

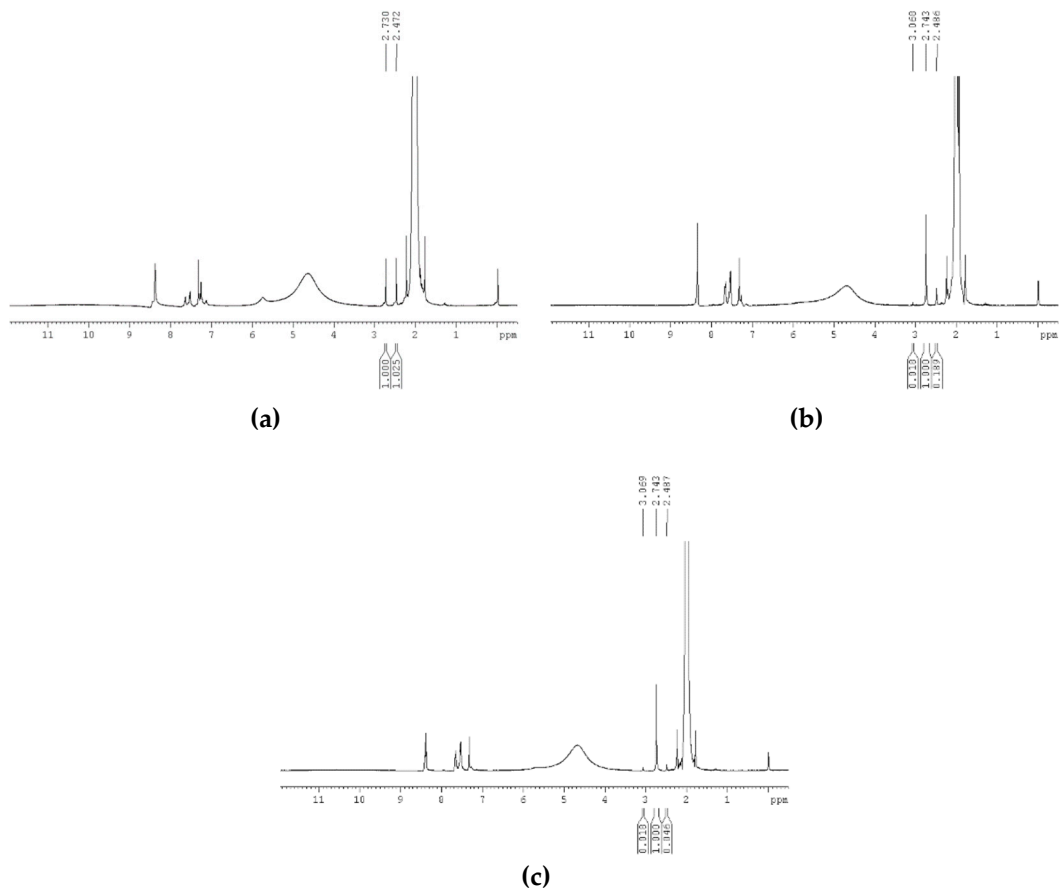


Figure S6. ^1H -NMR spectrum of catalytic result for DUT-5(Al) at room temperature for 24 (a), 48 (b) and 72 h (c).

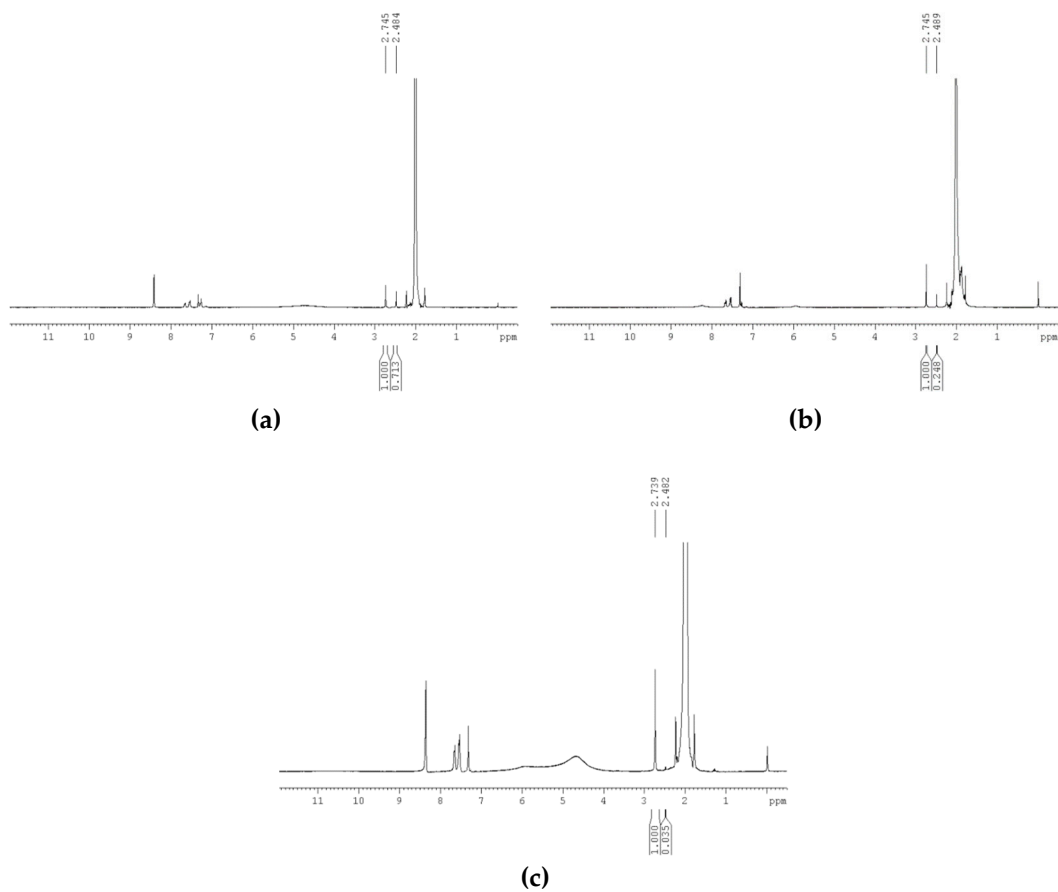


Figure S7. ^1H NMR spectrum of catalytic result for MIL-53(Al) at room temperature for 24 (a), 48 (b) and 72 h (c).

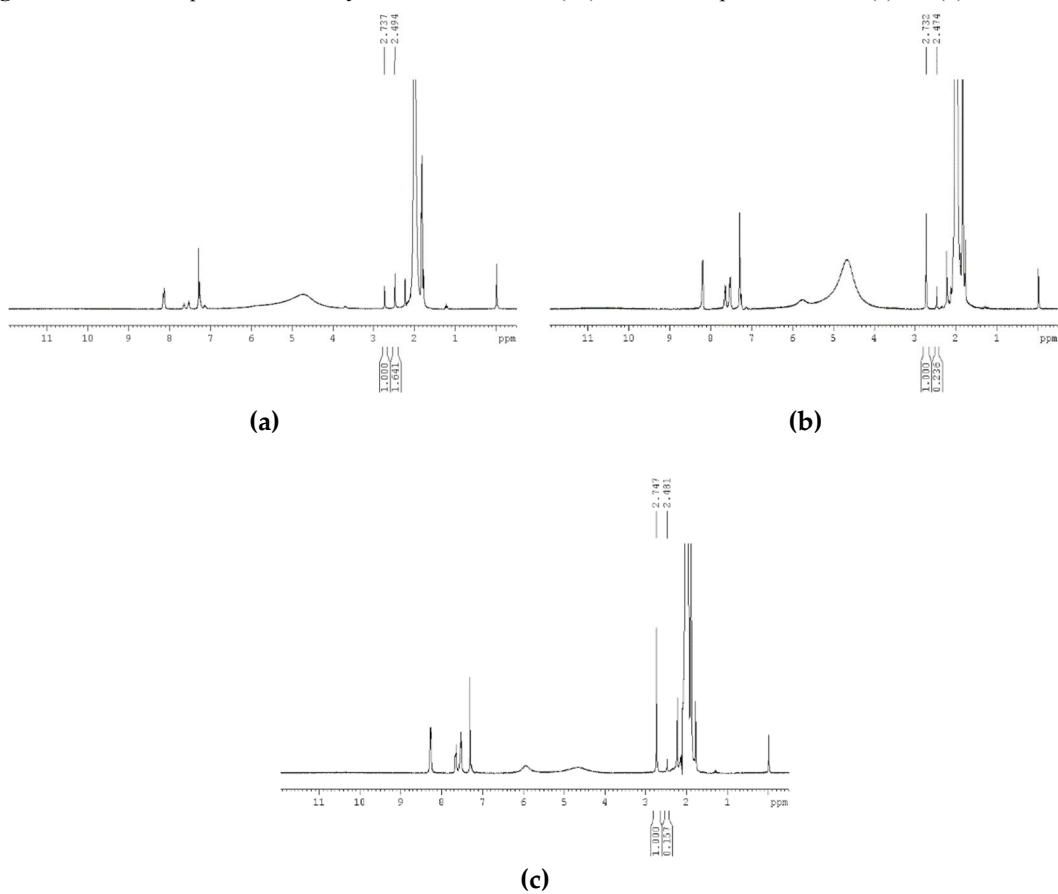


Figure S8. ^1H NMR spectrum of catalytic result for $\text{NH}_2\text{-MIL-53(Al)}$ at room temperature for 24 (a), 48 (b) and 72 h (c).

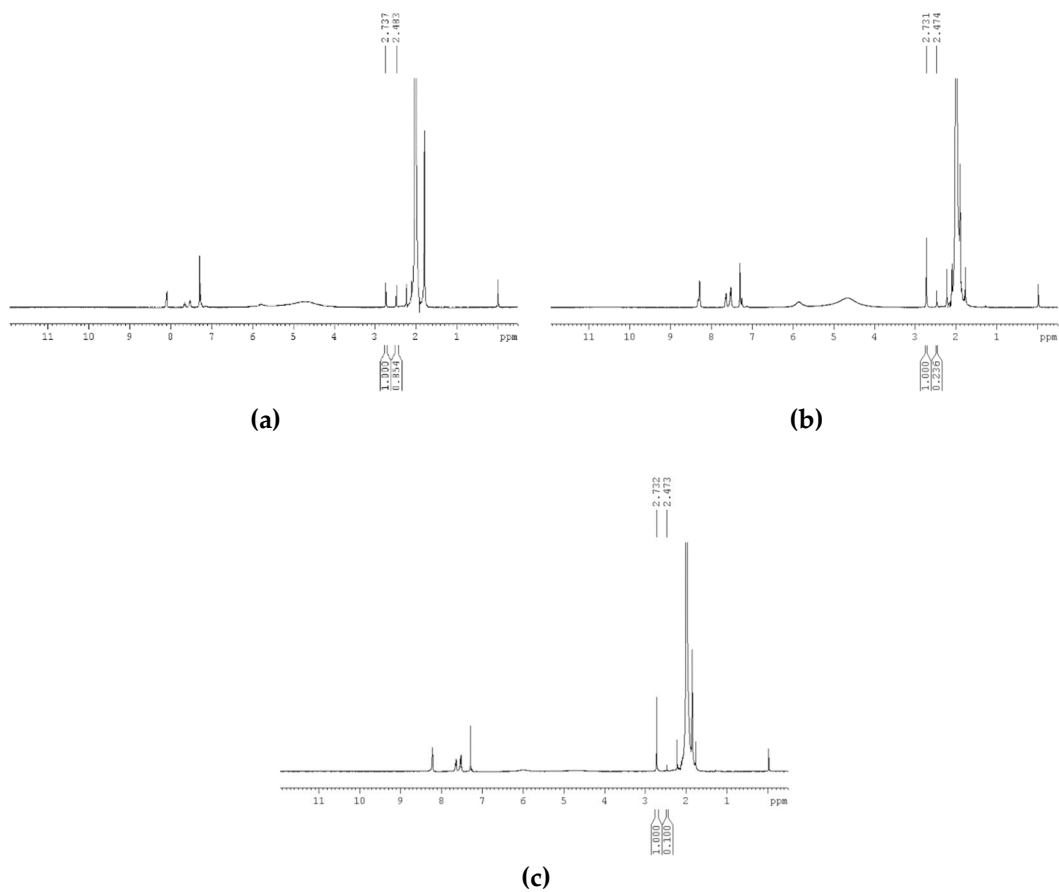
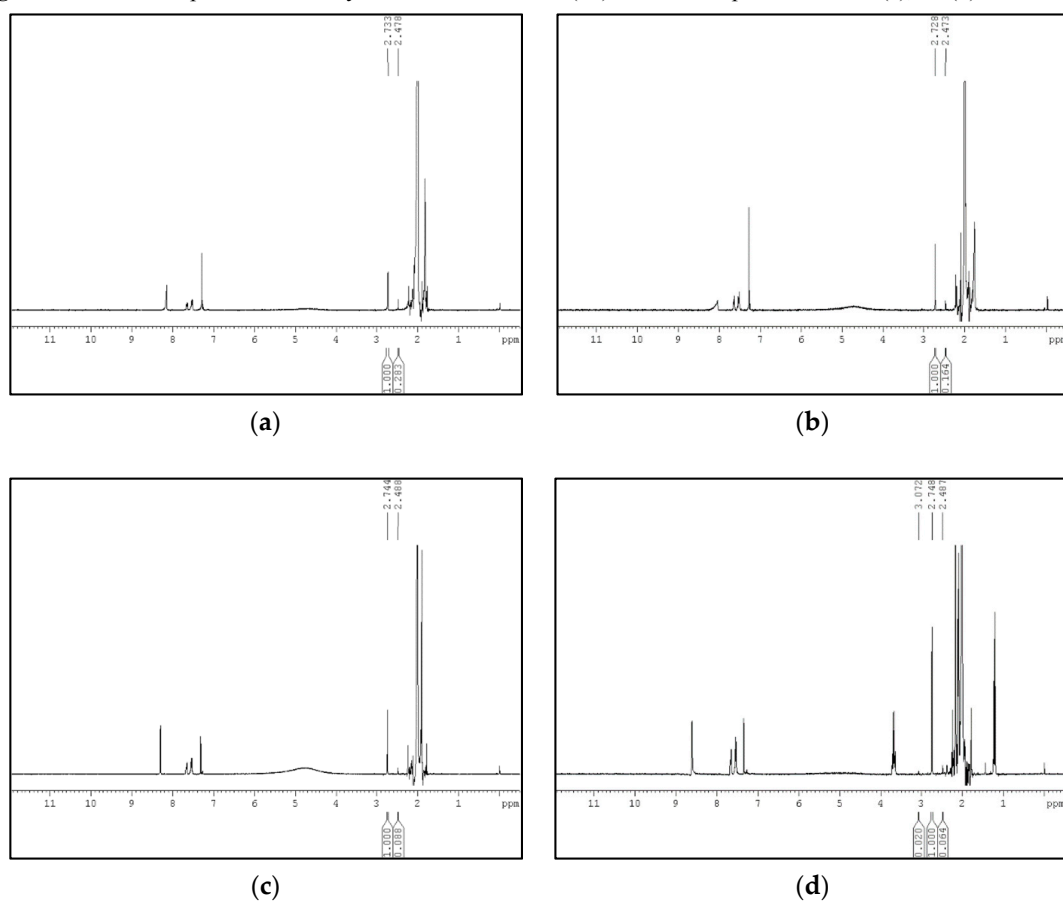
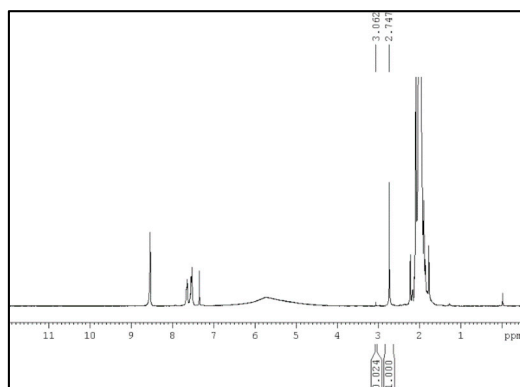


Figure S9. $^1\text{H-NMR}$ spectrum of catalytic result for MIL-100(Al) at room temperature for 24 (a), 48 (b) and 72 h (c).





(e)

Figure S10. ^1H NMR spectrum of catalytic result for DUT-4(Al) at 60 °C for 3 (a), 4 (b), 5 (c), 6 (d) and 7 h (e).

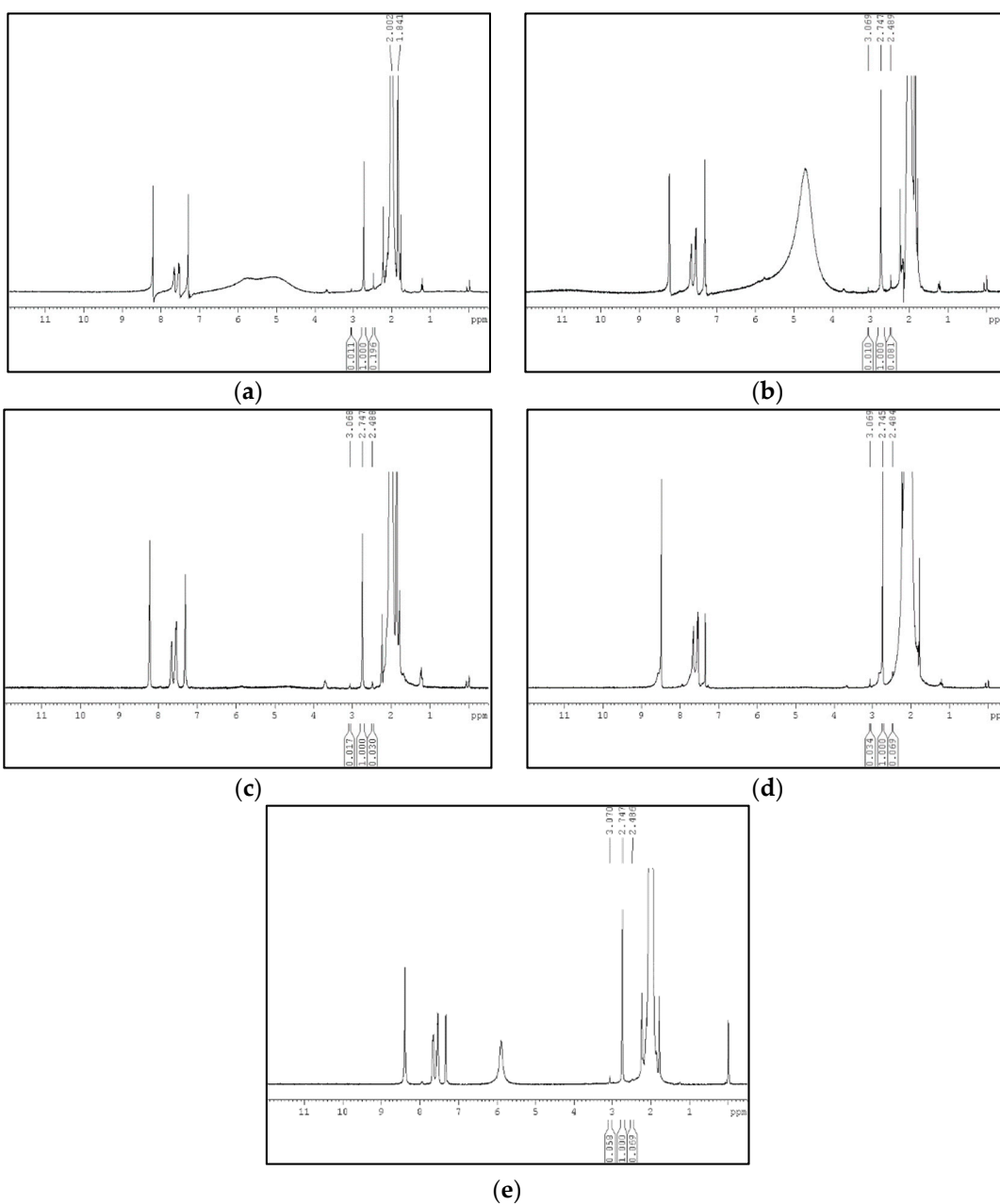


Figure S11. ^1H NMR spectrum of catalytic result for DUT-5(Al) at 60 °C for 3 (a), 4 (b), 5 (c), 6 (d) and 7 h (e).

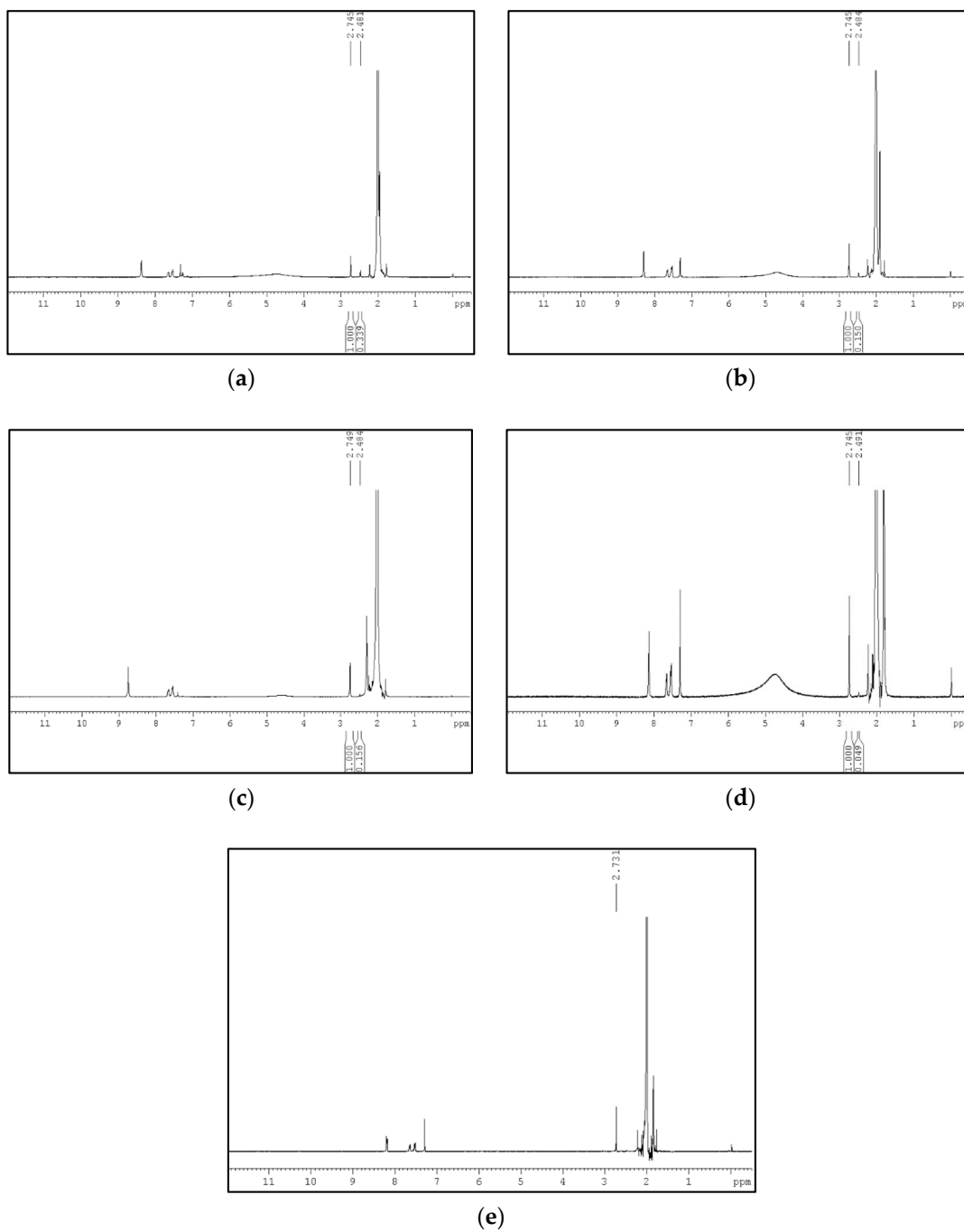
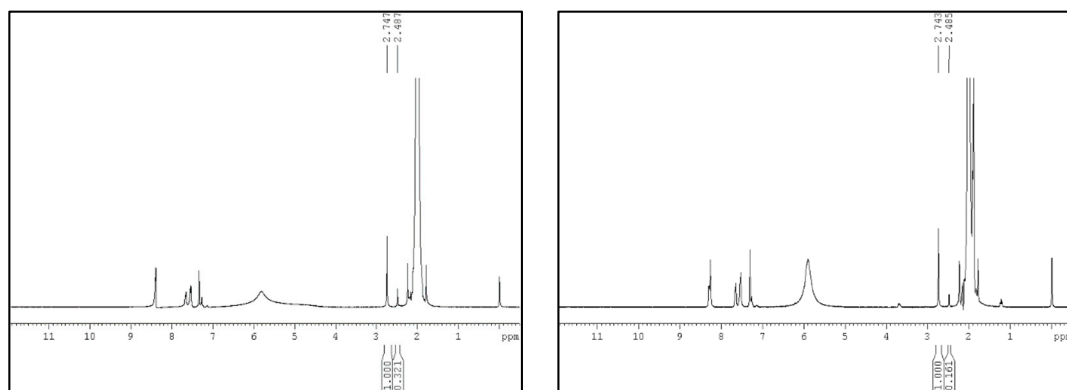


Figure S12. ^1H NMR spectrum of catalytic result for MIL-53(Al) at 60 °C for 3 (a), 4 (b), 5 (c), 6 (d) and 7 h (e).



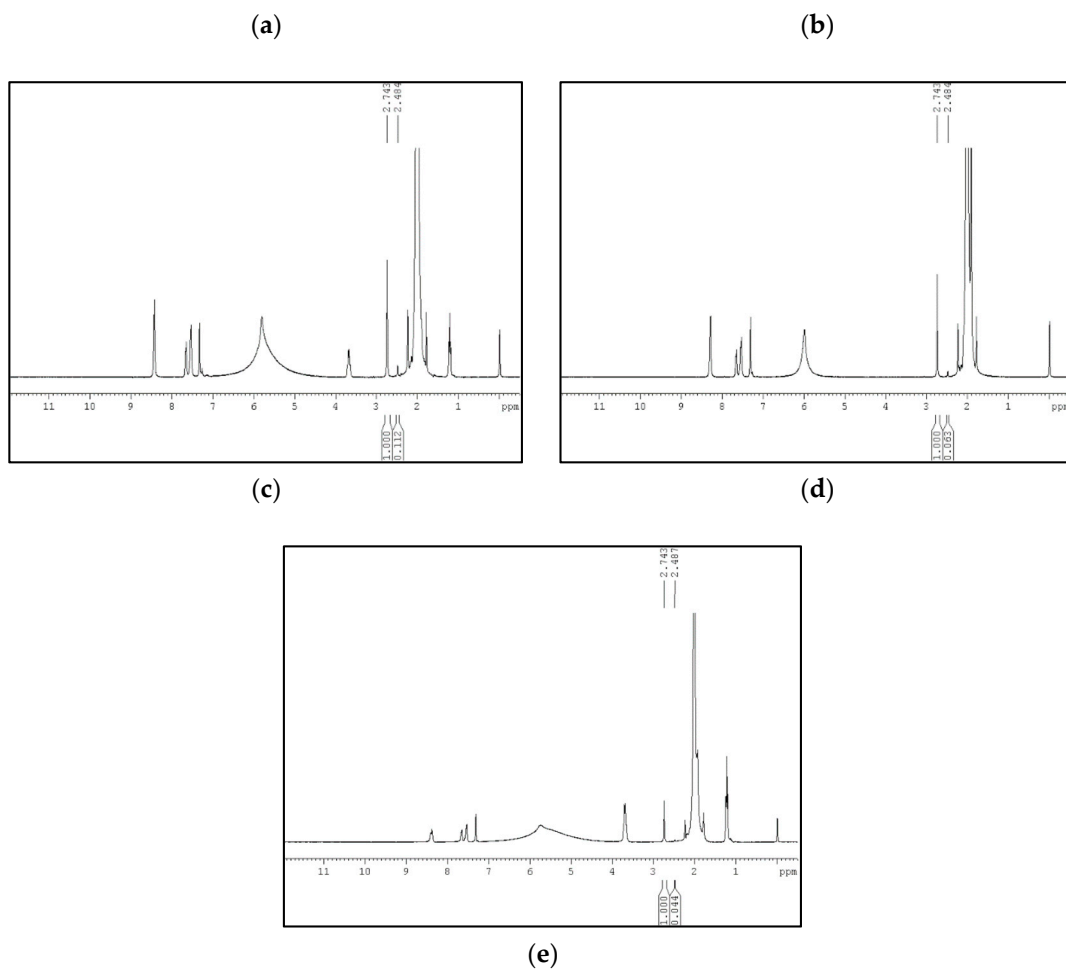
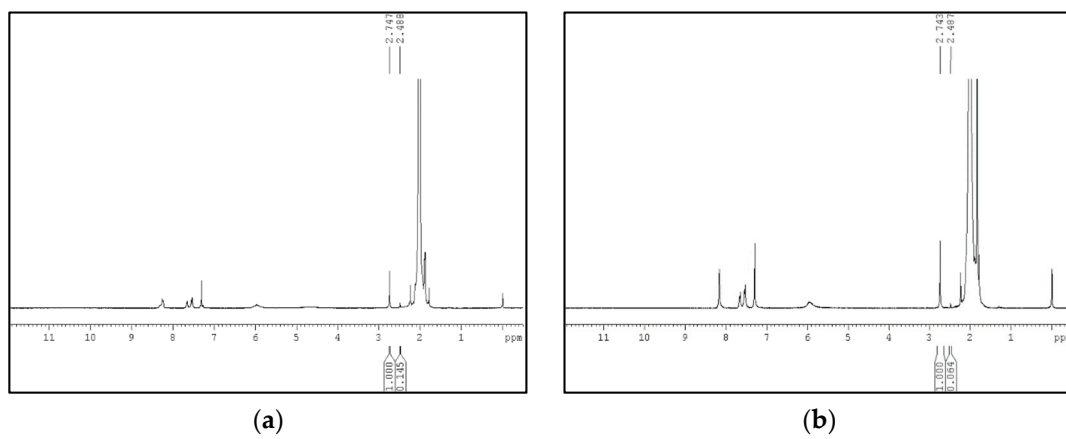


Figure S13. ^1H NMR spectrum of catalytic result for $\text{NH}_2\text{-MIL-53(Al)}$ at $60\text{ }^\circ\text{C}$ for 3 (a), 4 (b), 5 (c), 6 (d) and 7 h (e).



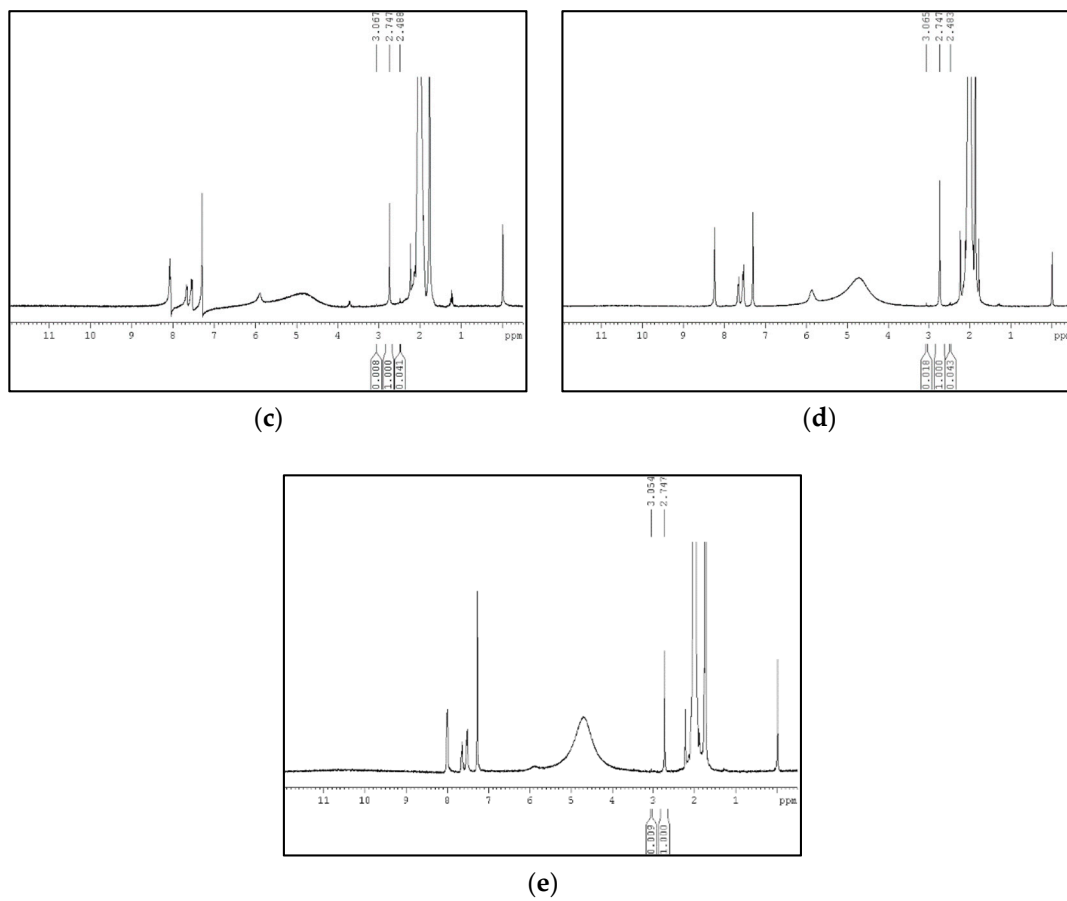
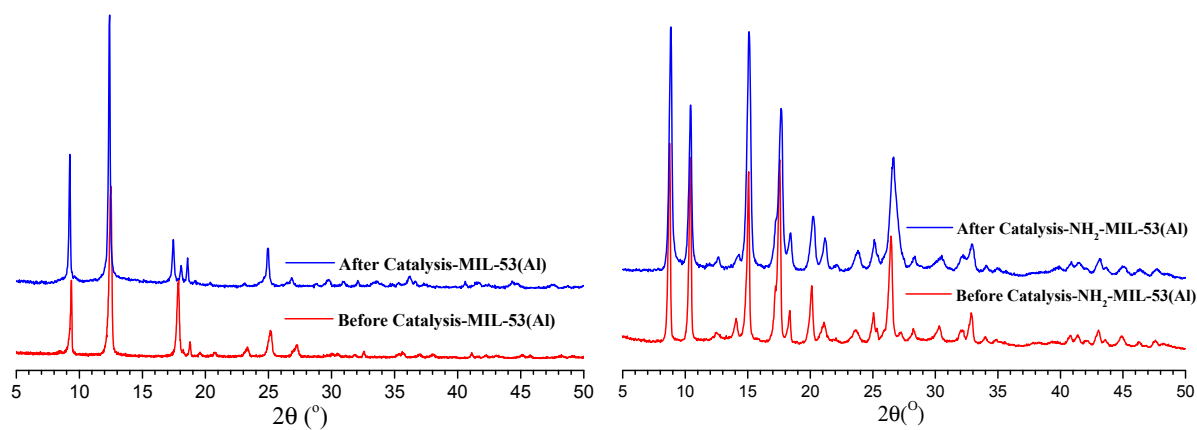


Figure S14. ^1H NMR spectrum of catalytic result for MIL-100(Al) at 60 °C for 3 (a), 4 (b), 5 (c), 6 (d) and 7 h (e).

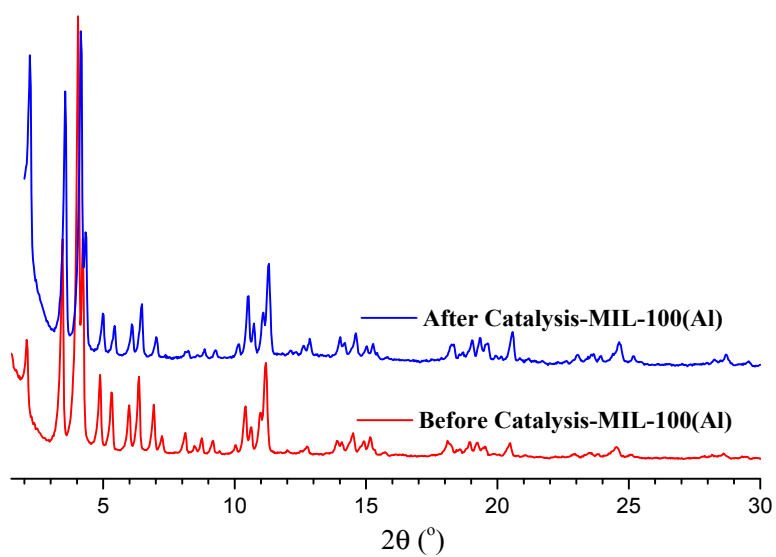
(a)

(b)



(c)

(d)



(e)

Figure S15. The comparison of PXRD patterns of (a) DUT-4(Al), (b) DUT-5(Al), (c) MIL-53(Al), (d) NH₂-MIL-53(Al), and (e) MIL-100(Al) before and after catalysis.