Supporting Information for

Synthesis of Self-Pillared Pentasil Zeolites without Organic Templates and Seeds

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This PDF contains:

Figure S1-15

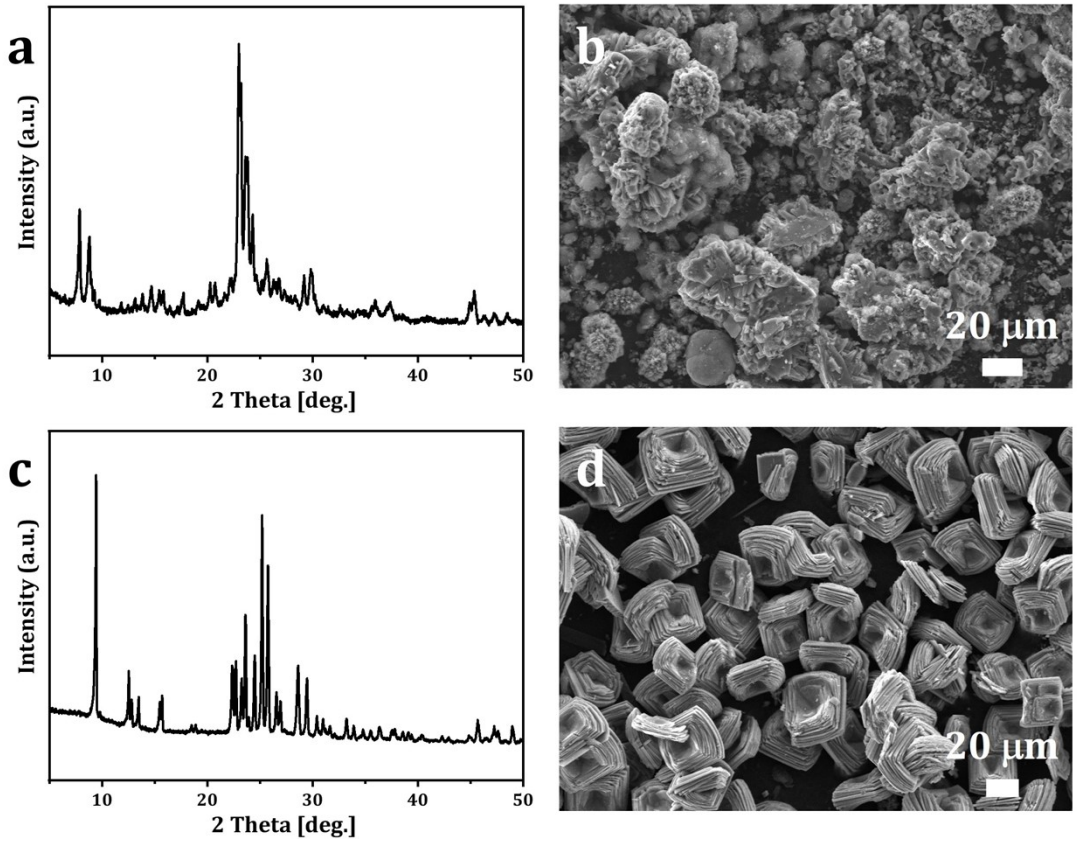

Figure S1. XRD patterns and SEM images of the samples synthesized with different cations: LiOH (a, b); KOH (c, d). (Aging at 90 °C for 12 h, crystallization at 175 °C for 4.5 days)

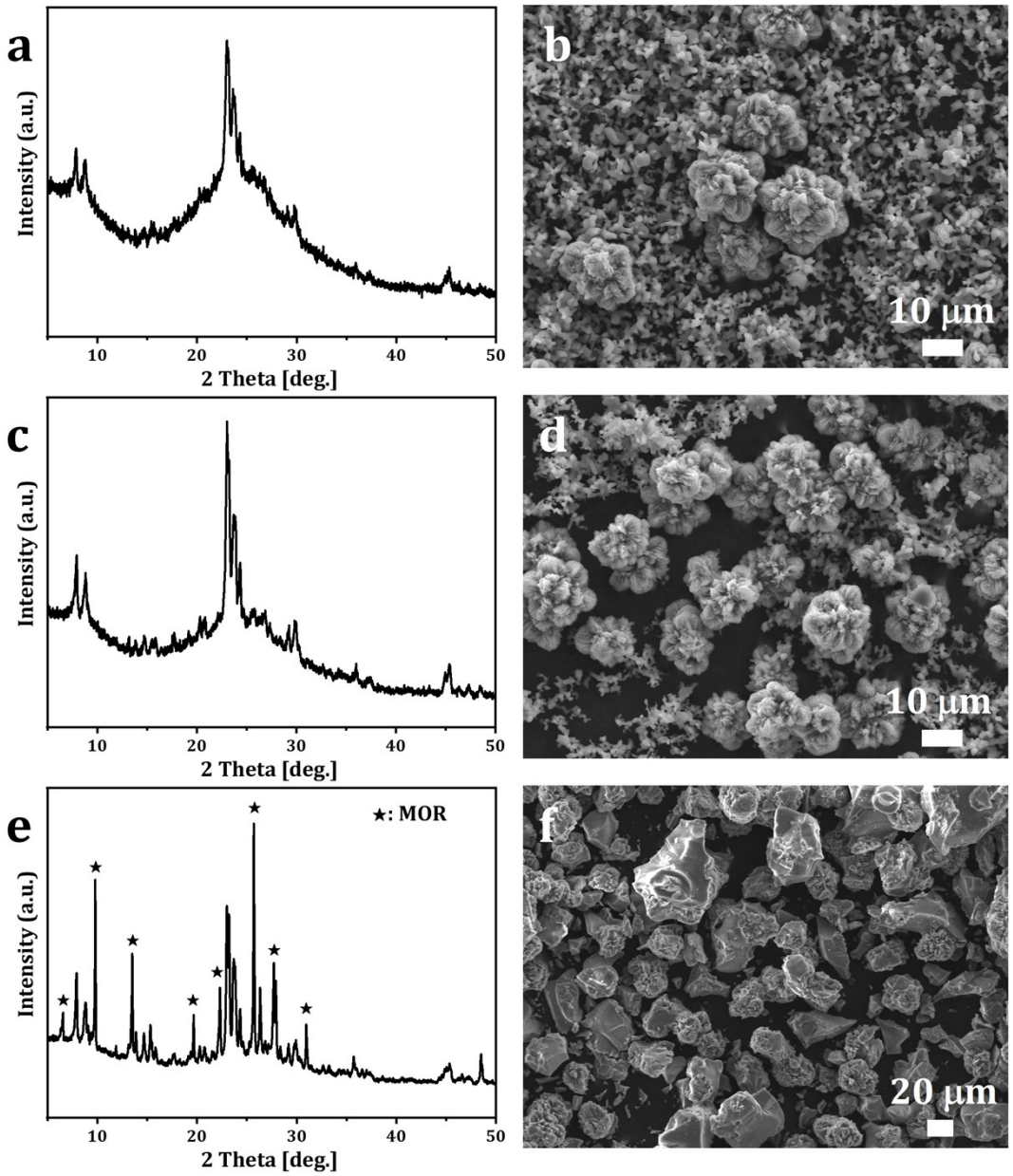

Figure S2. XRD patterns and SEM images of the samples synthesized with different $NaOH/SiO_2$ ratio: 0.05 (a, b), 0.1 (c, d) and 0.2 (e, f). (Aging at 90 °C for 12 h, crystallization at 175 °C for 4.5 days)

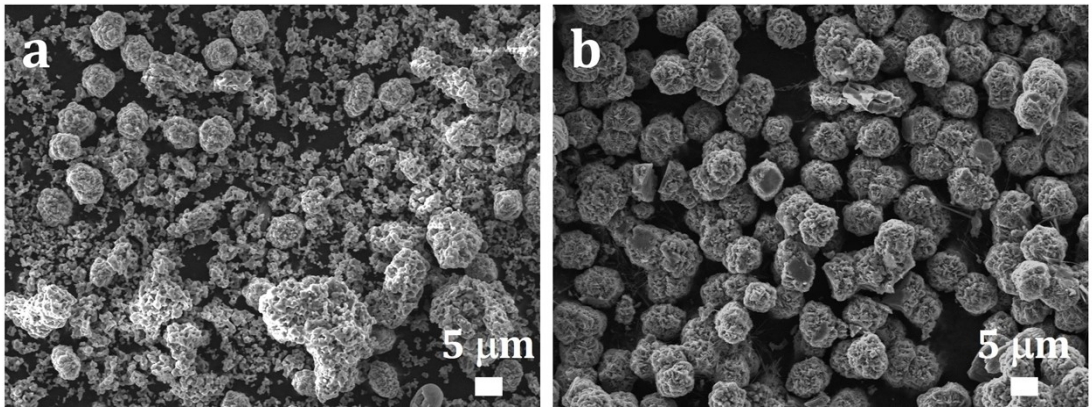

Figure S3. SEM images of the samples synthesized at different aging temperatures: 30 °C (a) and 60 °C (b). (Aging for 12 h, crystallization at 175 °C for 4.5 days)

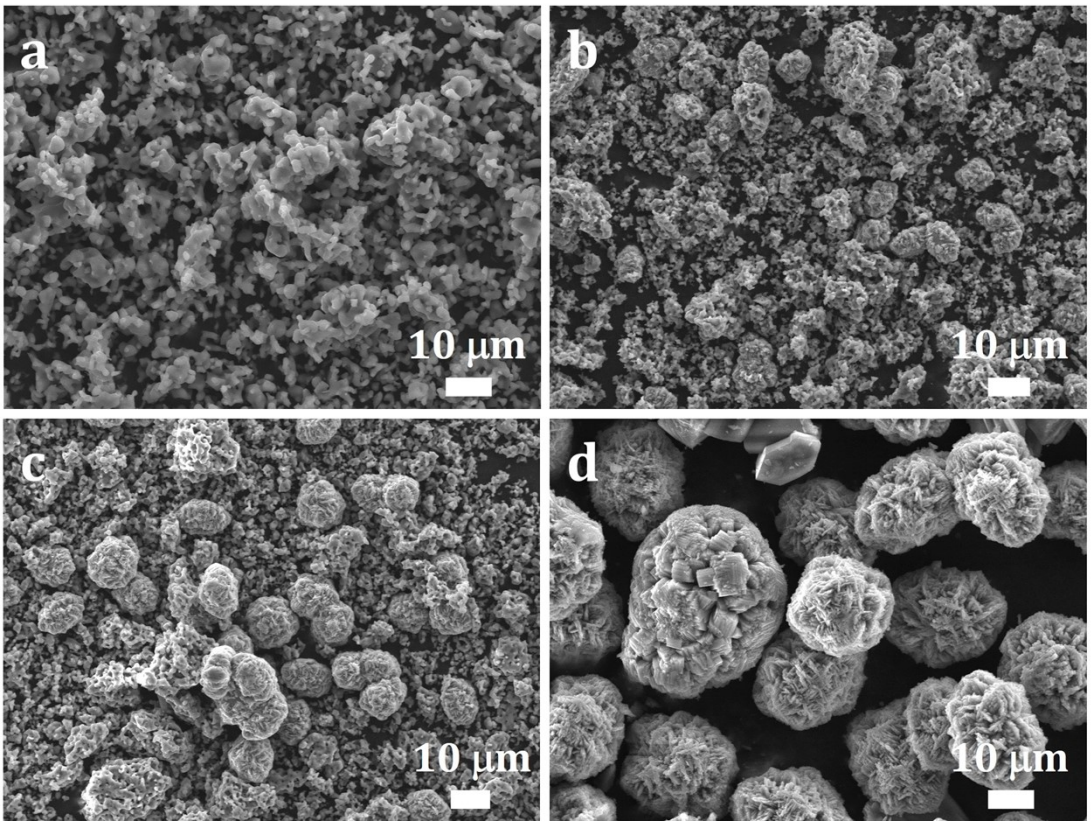

Figure S4. SEM images of the samples synthesized under different crystallization conditions: 150 °C for 4 days (a); 160 °C for 4 days (b); 170 °C for 4 days (c); 180 °C for 3 days (d).

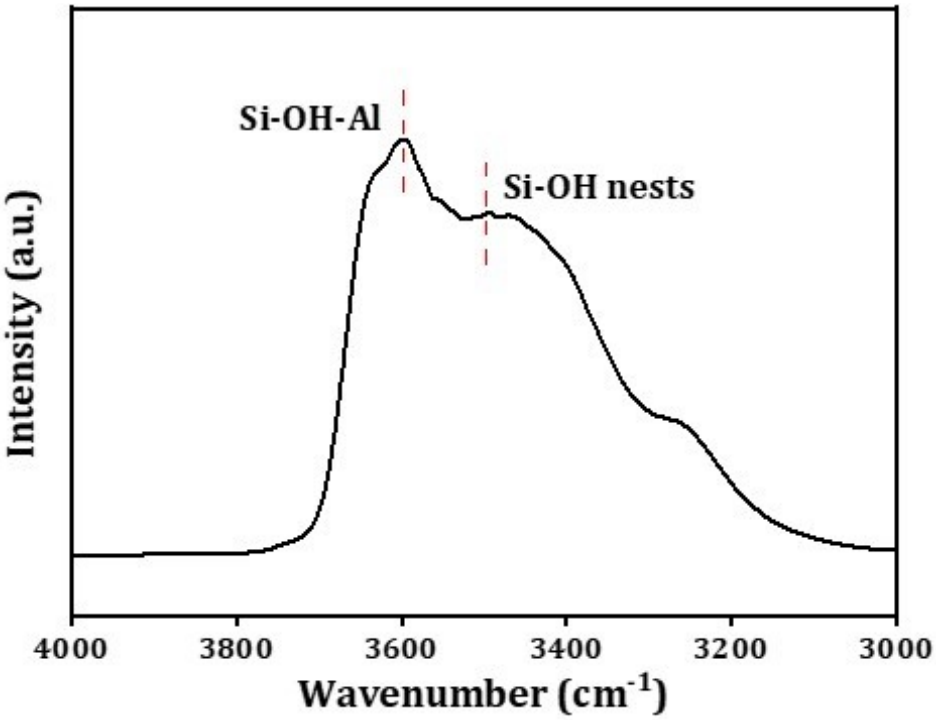

Figure S5. DRIFT spectrum of SPP zeolite in the hydroxyl region.

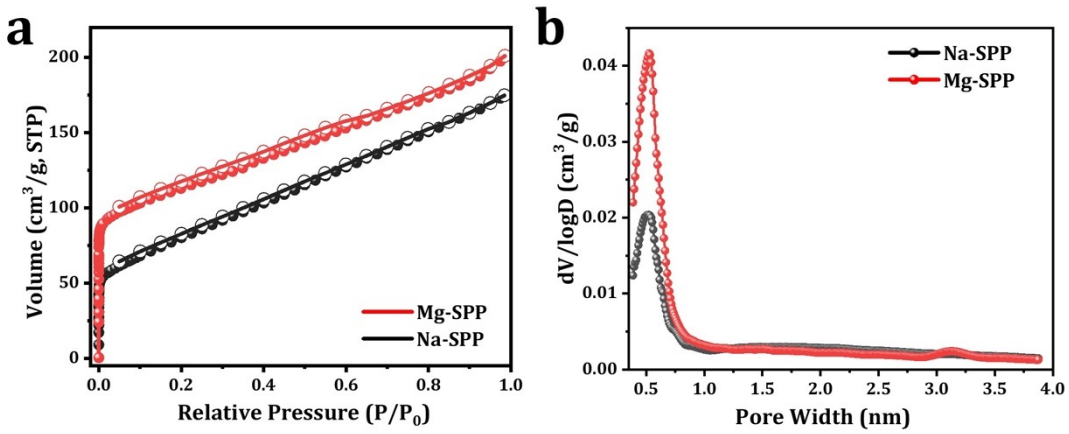

Figure S6. Ar adsorption/desorption isotherms (a) and pore distribution plots (b) calculated by SF methods of Na-SPP and Mg-SPP samples.

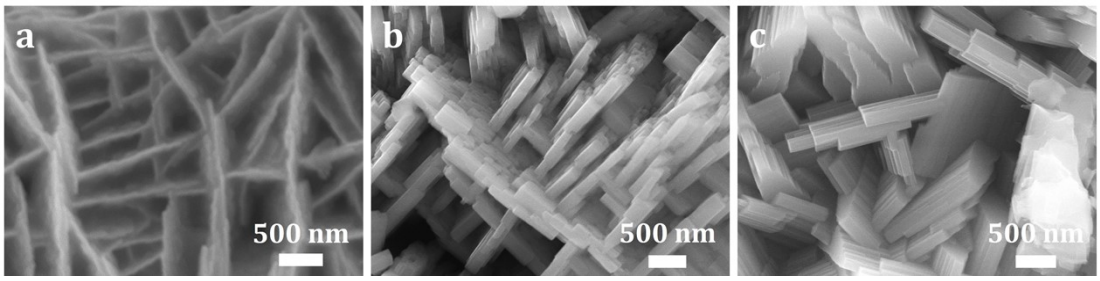

Figure S7. SEM images of the samples synthesized at 175 °C for different crystallization time: 4.5 days (a), 4.5 days + 2 h (b) and 4.5 days + 4 h (c).

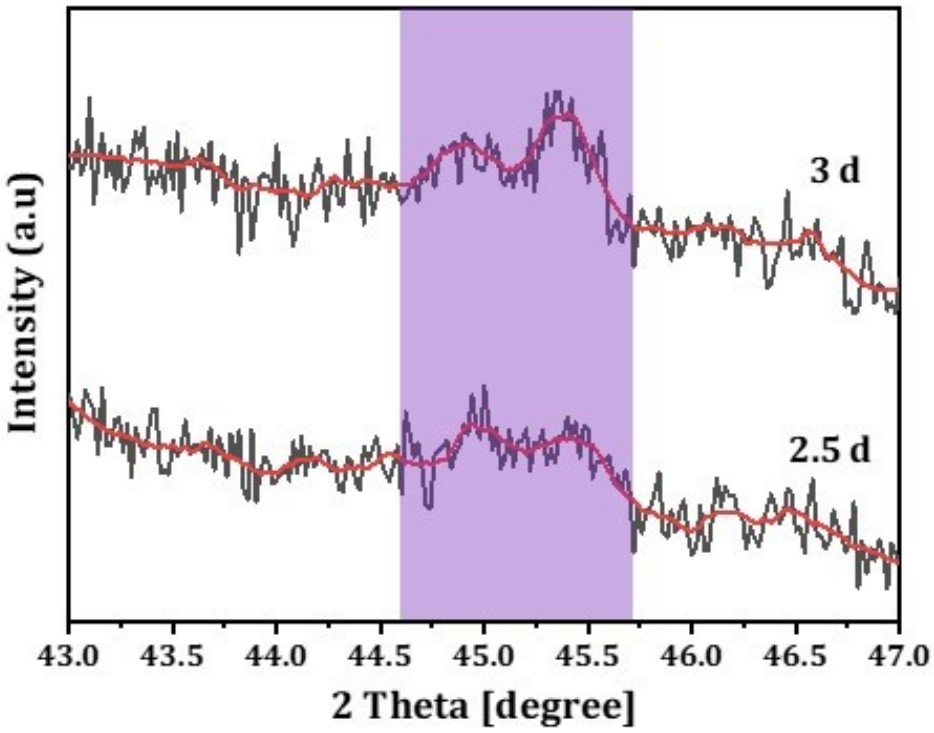

Figure S8. XRD patterns in the region 43–47° of the samples synthesized with different crystallization time.

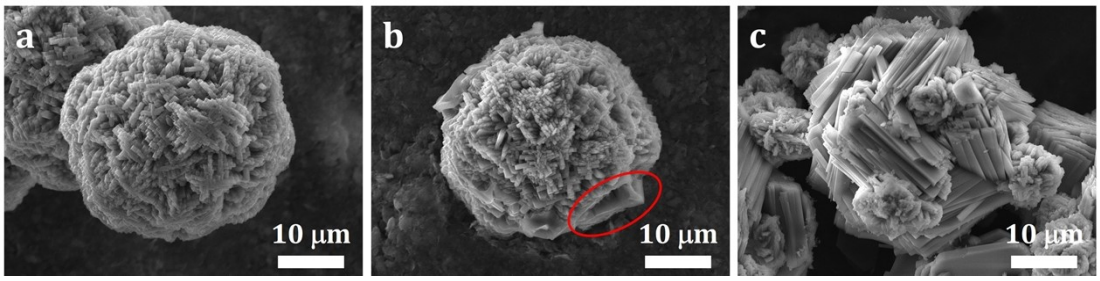

Figure S9. SEM images of the samples synthesized at 175 °C with different crystallization time: 4.5 days+ 4 h (a), 4.5 days + 8 h (b) and 5 days (c).

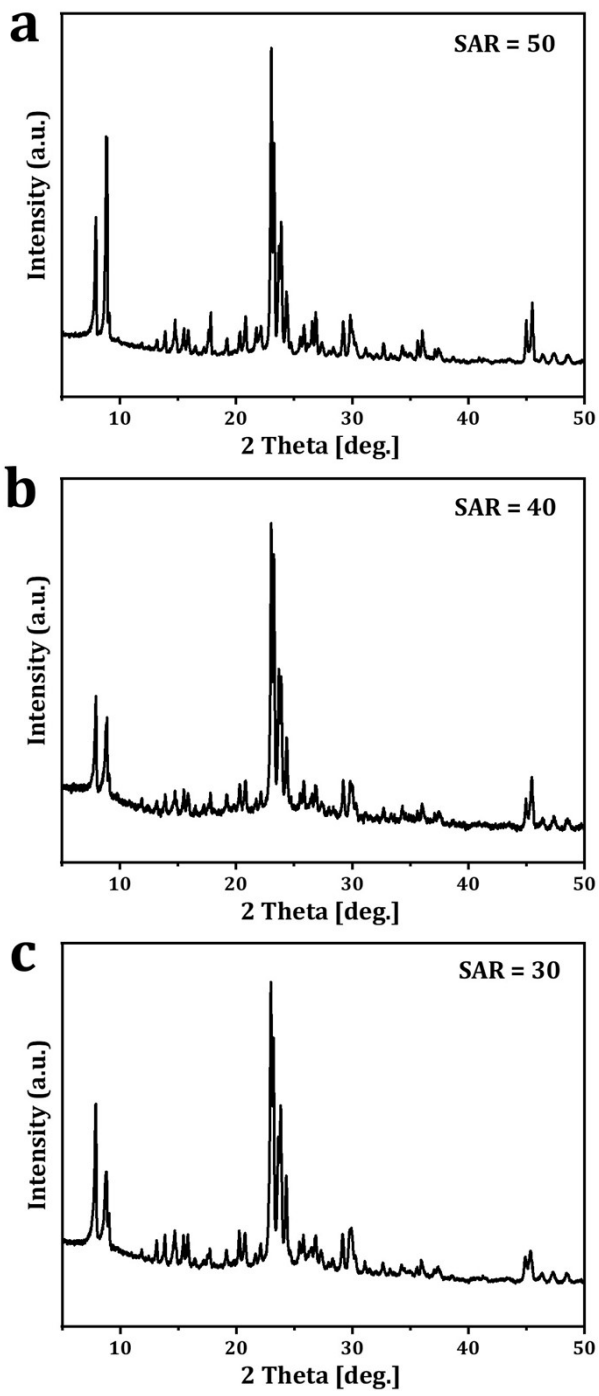

Figure S10. XRD patterns of samples with different SARs: 50 (a), 40 (b) and 30 (c). (Aging at 90 °C for 12 h, crystallization at 175 °C for 4.5 days)

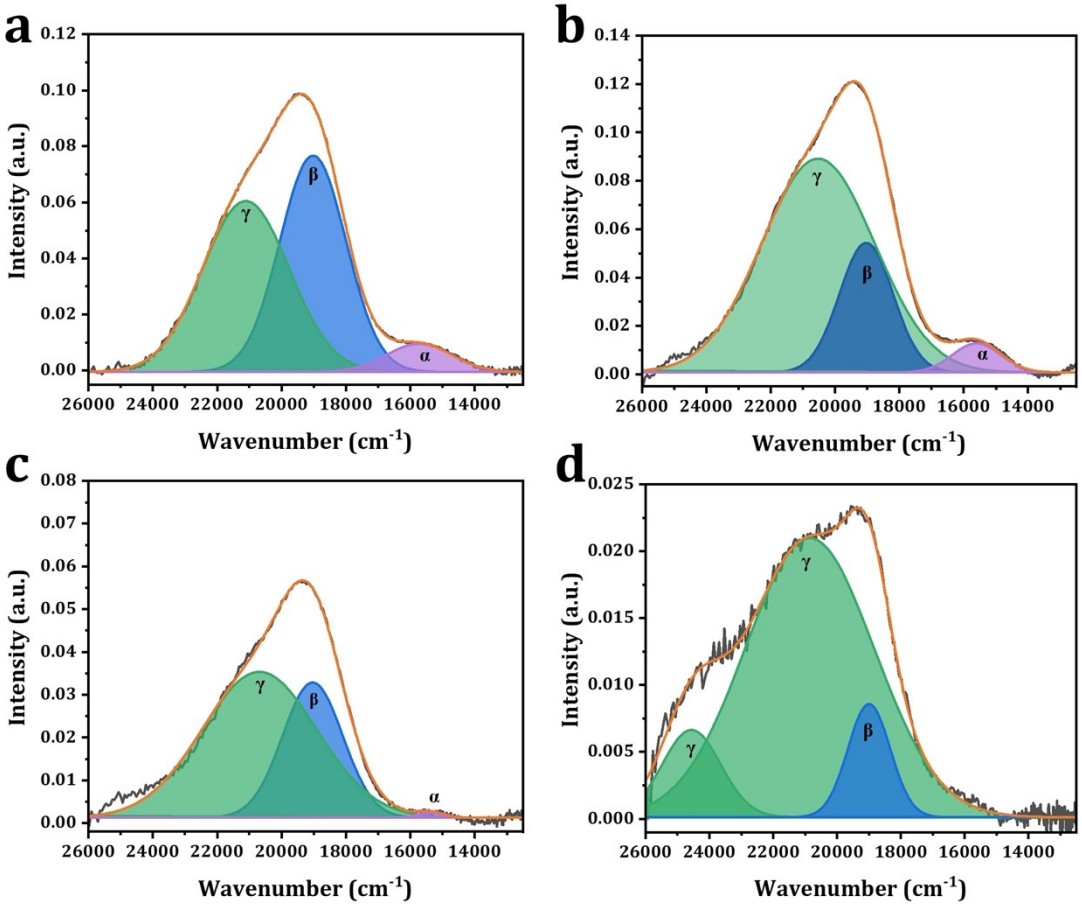

Figure S11. UV-vis spectra of Co^{2+}-exchanged zeolite samples with different SARs: 20 (a), 30 (b), 40 (c) and 50 (d).

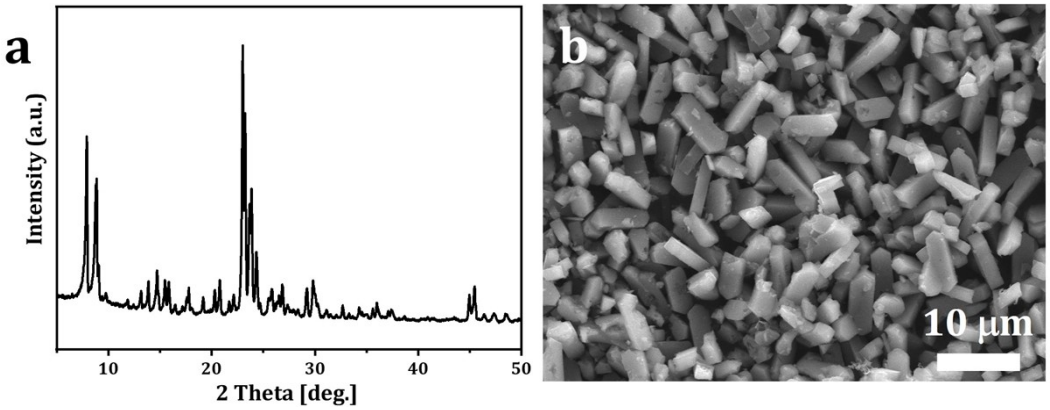

Figure S12. XRD pattern (a) and SEM image (b) of the sample synthesized by adding 10% obtained SPP zeolites as seeds into the gel with SAR of 50. (Aging at 90 °C for 12 h, crystallization at 175 °C for 4.5 days)

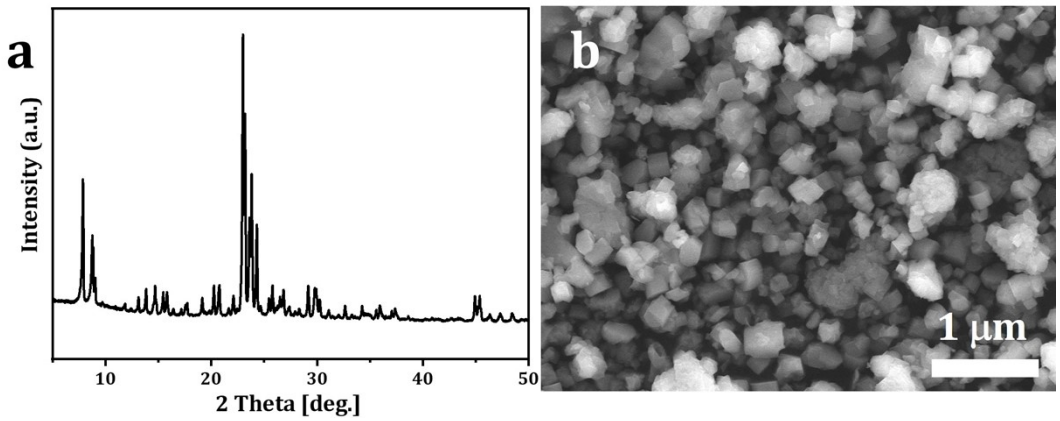

Figure S13. XRD pattern (a) and SEM image (b) of the commercial ZSM-5 with SAR of 28.

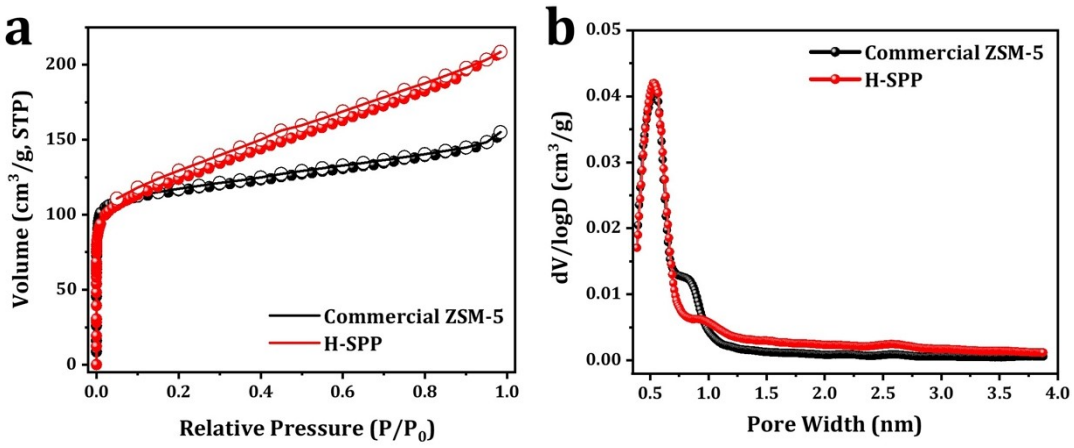

Figure S14. Ar adsorption/desorption isotherms (a) and pore distribution plots (b) of commercial ZSM-5 (SAR=28) and H-SPP zeolite.

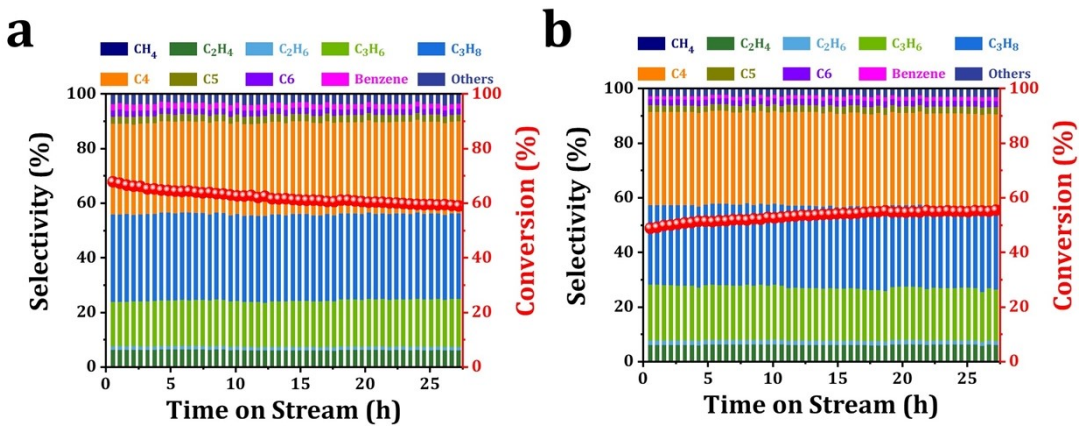

Figure S15. Catalytic cracking of n-heptane on H-SPP zeolites (a) and commercial ZSM-5 (b). Reaction conditions: WHSV= 4 h^{-1}, T= 400 °C, total N_2 flow= 100 mL min^{-1}.