Supporting Information

Excellent Performance of One-pot Synthesized Fe-containing MCM-22 Zeolites for the Selective Catalytic Reduction of NO_x with NH_3

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As the Supporting Information of the manuscript "Excellent Performance of One-pot Synthesized Fe-containing MCM-22 Zeolites for the Selective Catalytic Reduction of NO_x with NH_3", following materials are provided:

(1) Nitrogen adsorption/desorption isotherms of Fe/MCM-22 and parent H-MCM-22 zeolites (Figure S1);

(2) Deconvolution of the UV-vis spectra of Fe/MCM-22 zeolites prepared by different methods (Figure S2);

(3) Deconvolution of the NH_3-TPD profiles of Fe/MCM-22 and parent H-MCM-22 zeolites (Figure S3);

(4) Py-IR spectra of Fe/MCM-22 and parent H-MCM-22 zeolites determined at different desorption temperature (Figure S4);

(5) The acid densities of Lewis (L) and Brönsted (B) acid sites with different acid strength (Figure S5);

(6) TEM-EDS element mapping of IM-Fe/M22 zeolite (Figure S6).

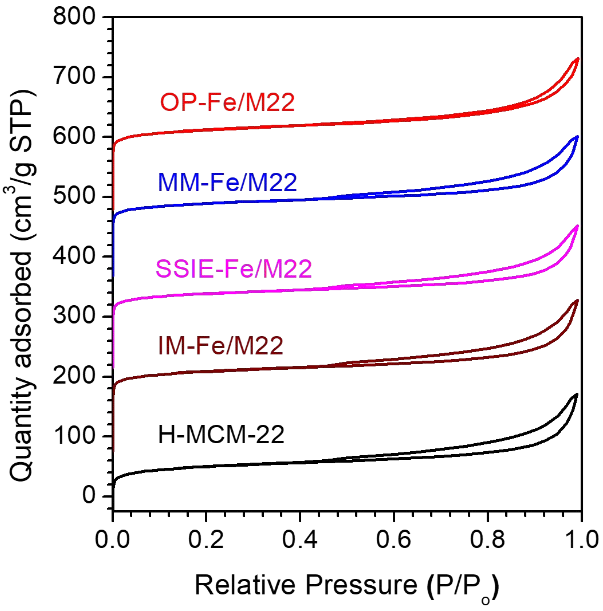

Figure S1 Nitrogen adsorption/desorption isotherms of Fe/MCM-22 and parent H-MCM-22 zeolites

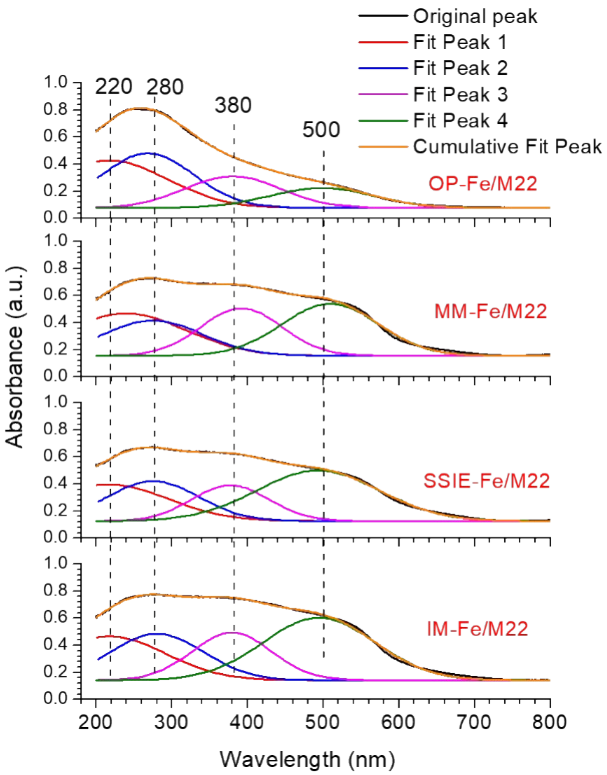

Figure S2 Deconvolution of the UV-vis spectra of Fe/MCM-22 zeolites prepared by different methods as shown in Figure 3 (the spectra are deconvoluted by using Gaussian functions)

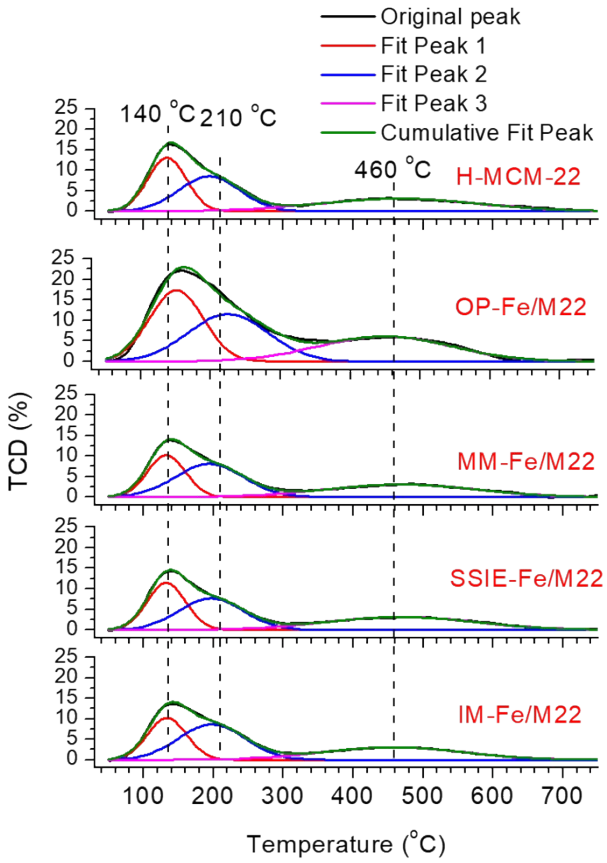

Figure S3 Deconvolution of the NH_3-TPD profiles of Fe/MCM-22 and parent H-MCM-22 zeolites as shown in Figure 5 (the profiles are deconvoluted by using Gaussian functions)

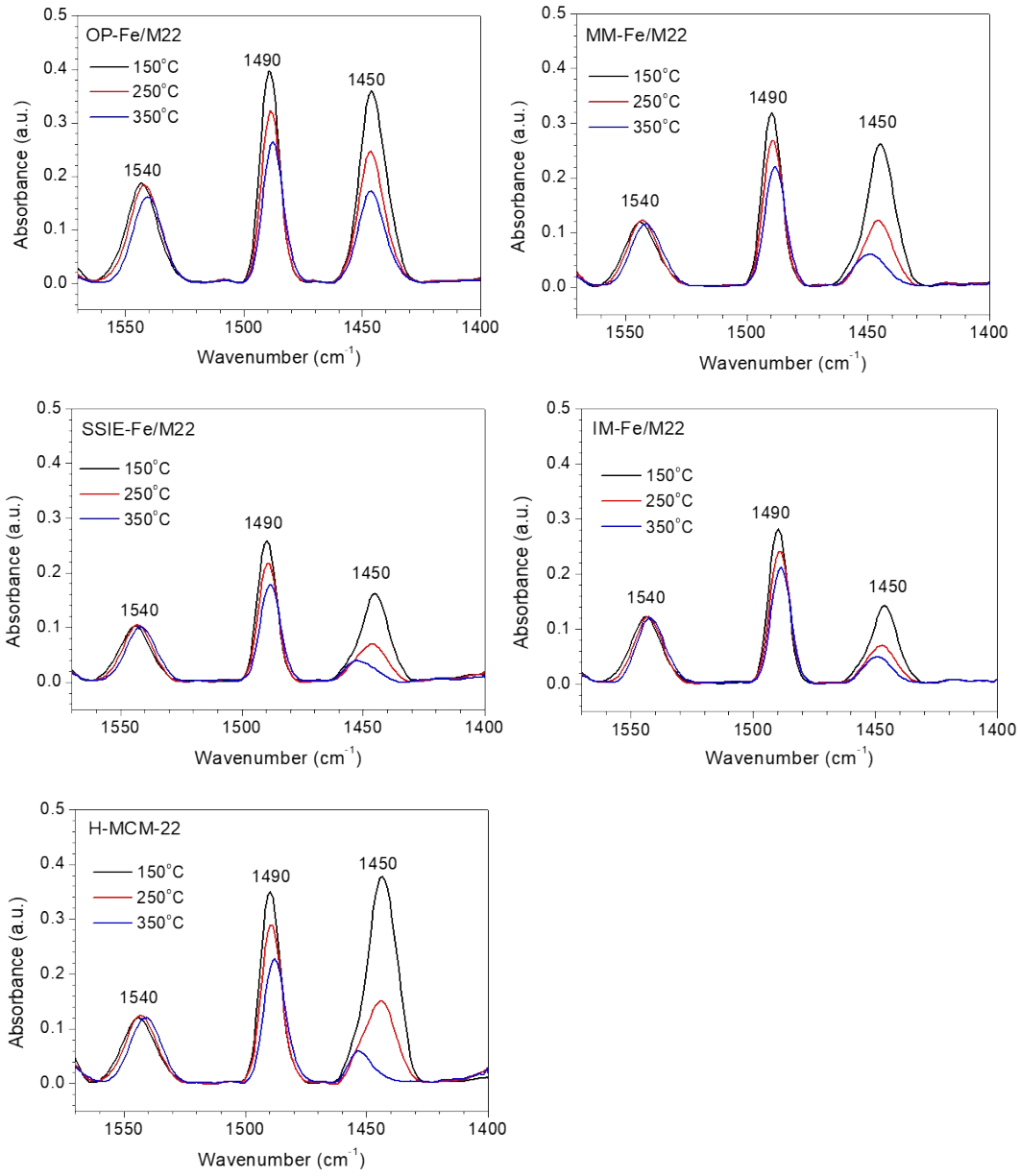

Figure S4 Py-IR spectra of Fe/MCM-22 and parent H-MCM-22 zeolites determined at different desorption temperature (150 ºC, 250 ºC and 350 ºC).

The Pyridine adsorption bands at 1540 cm^{-1} and 1450 cm^{-1} are attributed to pyridinium ions (PyH^+) formed by pyridine adsorbed on Brönsted acid sites, and to pyridine coordinated to Lewis acid sites (PyL), respectively. The bands at 1490 cm^{-1} are contributed by both PyH^+ and PyL. The bands at 1540 cm^{-1} and 1450 cm^{-1} are used to estimate the densities of Brönsted acid sites and Lewis acid sites, respectively, according to Madeira et al.[1]

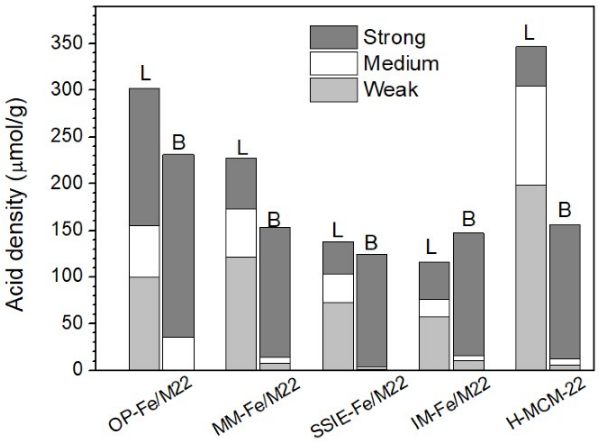

Figure S5 The acid densities of Lewis (L) and Brönsted (B) acid sites with different acid strength (strong, medium and weak represent the strength of L or B acid sites, which were calculated from Py-IR spectra recorded at 350 ^{o}C, between 250 to 350 ^{o}C and between 150 to 250 ^{o}C, respectively, as described in section 2.2).

[1] F. Ferreira Madeira, K. Ben Tayeb, L. Pinard, H. Vezin, S. Maury and N. Cadran, *Appl. Catal. A: General*, 2012, **443–444**, 171–180.

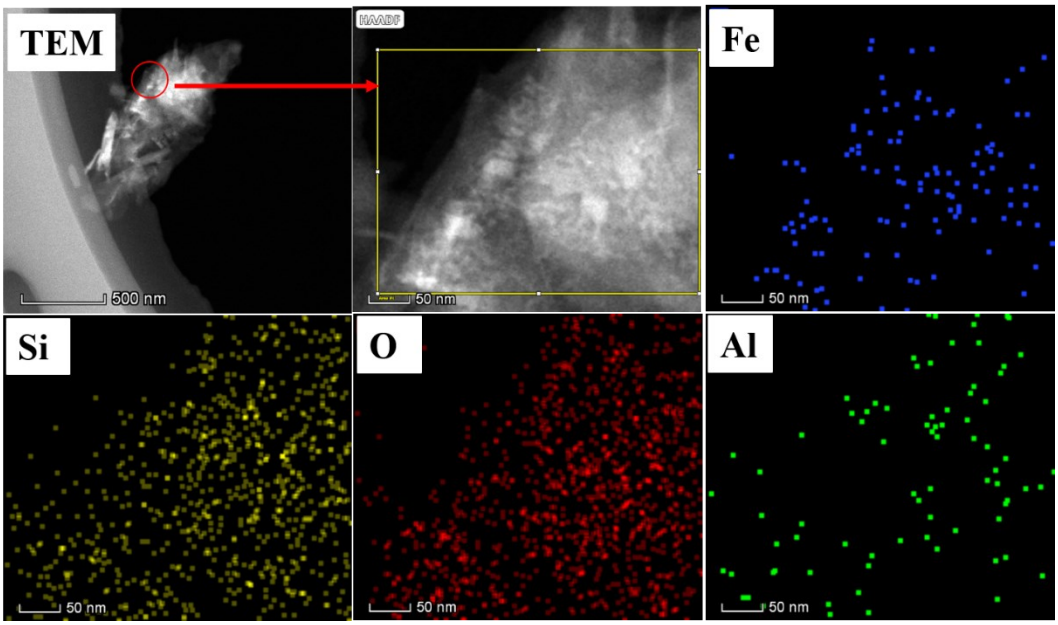

Figure S6 TEM-EDS element mapping of IM-Fe/M22 zeolite