

Promotion Effect of the X-zeolite Host on Encapsulated Platinum Clusters for Selective Hydrogenation of Phenylacetylene to Styrene

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Table S1. The Pt content (wt.%) in different samples.

Samples	Pt Content (wt.%, ICP-AES)
Pt@X-zeolite	1.21
Pt/X-zeolite	1.19

Table S2. The Pt content (wt.%) in different samples after reaction of ten cycles.

Samples	Pt Content (wt.%, ICP-AES)
Pt@X-zeolite	1.18
Pt/X-zeolite	0.92

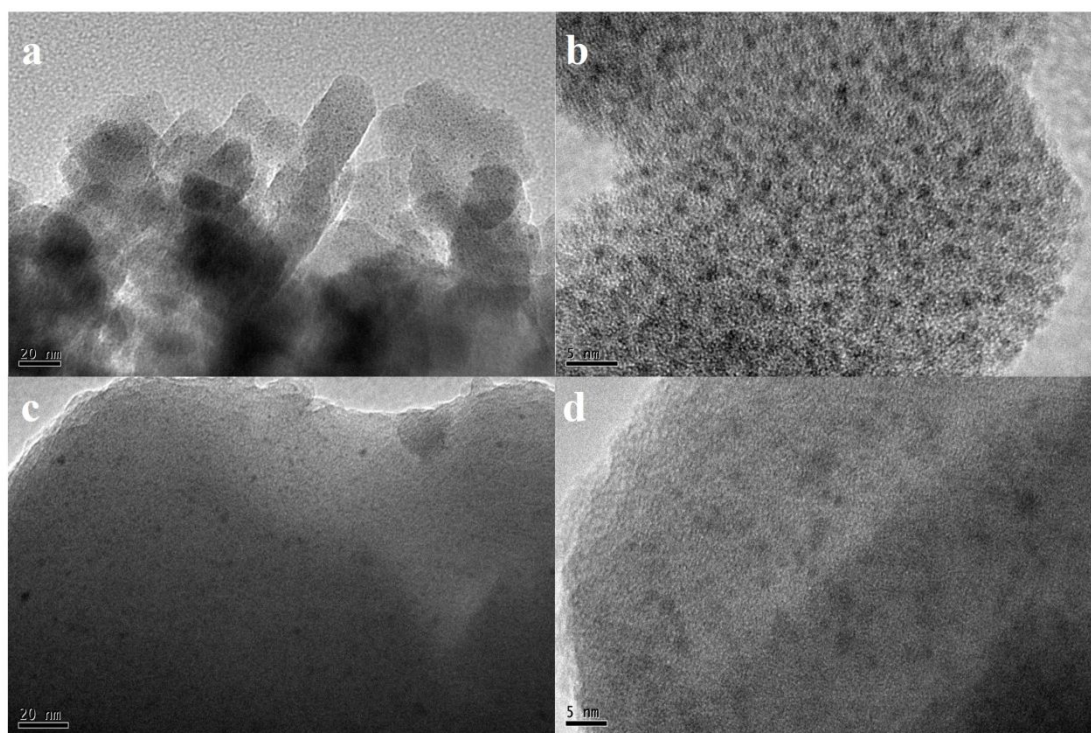


Figure S1. The HR-TEM images of (a) (b): Pt@X-zeolite and (c) (d): Pt/X-zeolite.

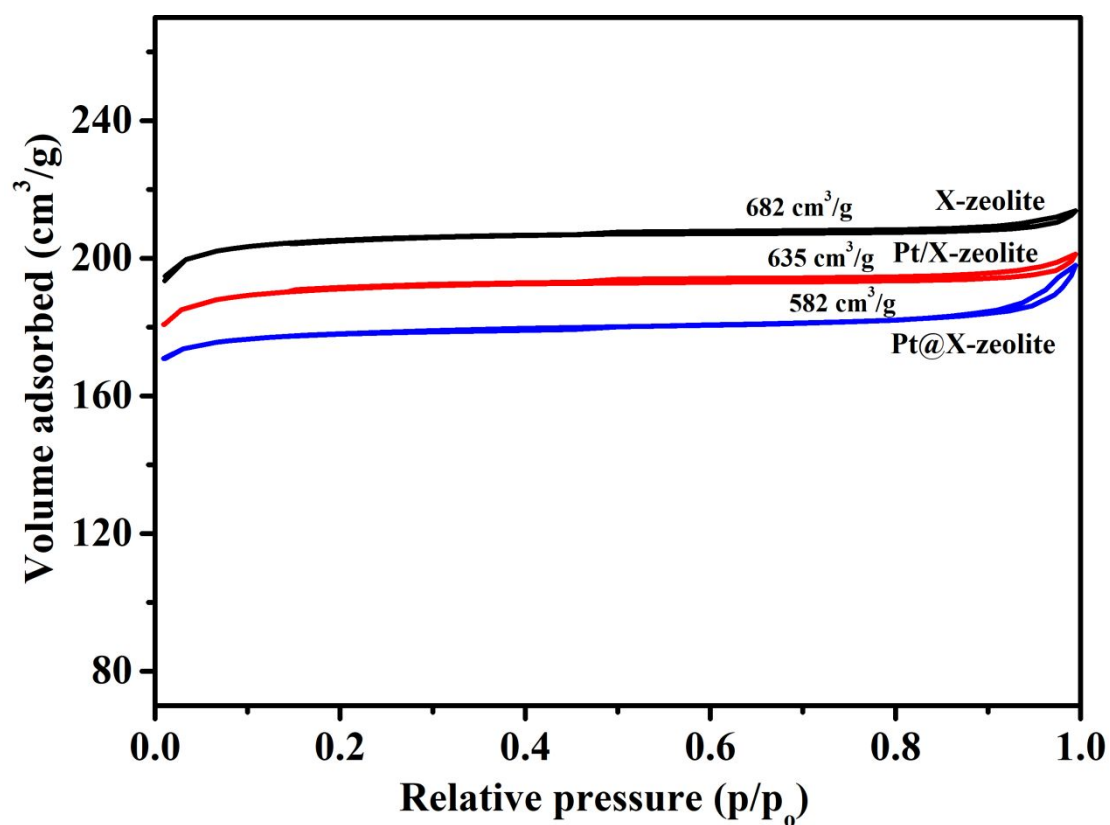


Figure S2. The N₂ adsorption/desorption isotherms of X-zeolite, Pt/X-zeolite and Pt@X-zeolite. (The N₂ adsorption/desorption isotherms of the three samples all display typical Langmuir-type curve (I-type) and their shapes are the same).

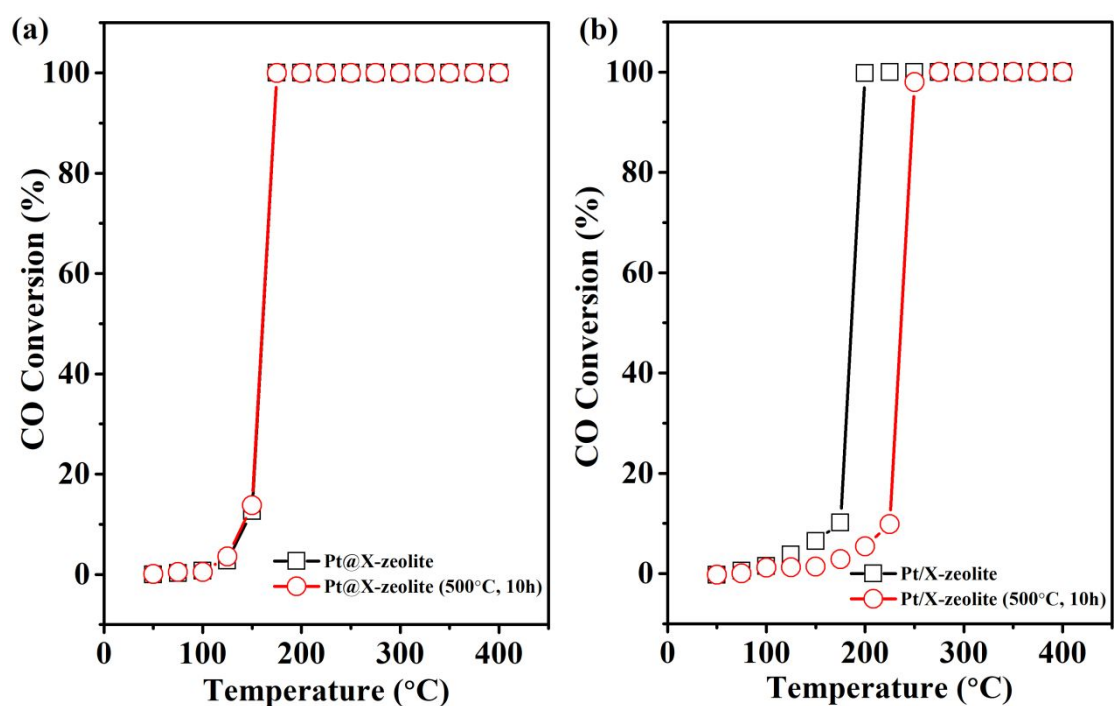


Figure S3. (a) The CO conversion over Pt@X-zeolite and (b) Pt/X-zeolite after the prolonged time

of 10 h reaction at 500°C.

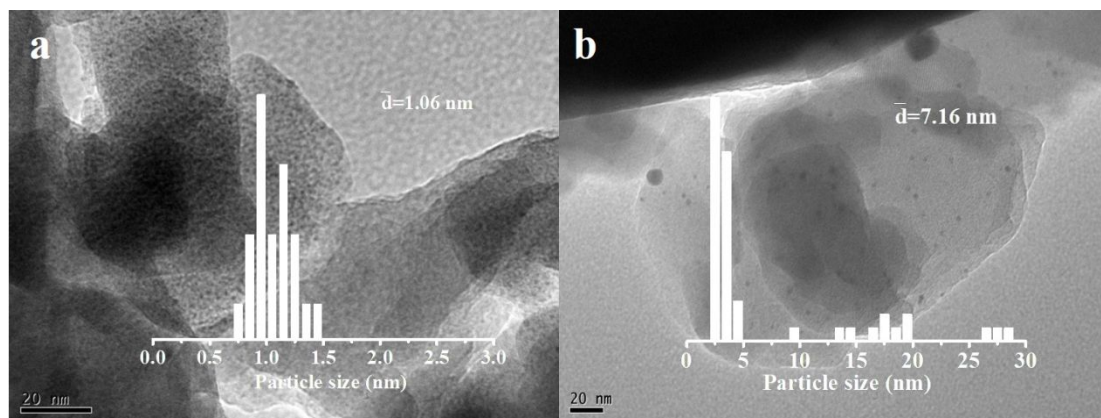


Figure S4. (a) The HR-TEM images for Pt@X-zeolite after the prolonged time of 10 h reaction at 500°C; (b) The HR-TEM images for Pt/X-zeolite after the prolonged time of 10 h reaction at 500°C. The size distribution of Pt clusters in the two samples is also inserted.

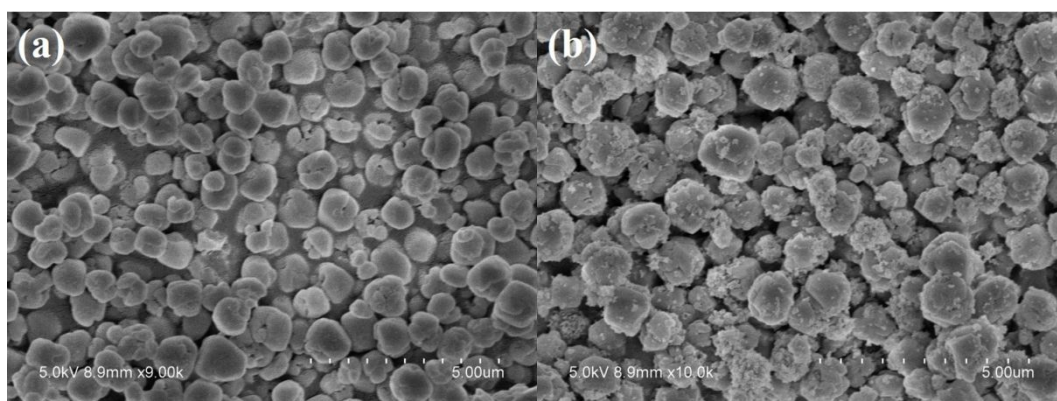


Figure S5. The SEM images of (a) Pt/X-zeolite and (b) Pt@X-zeolite samples.

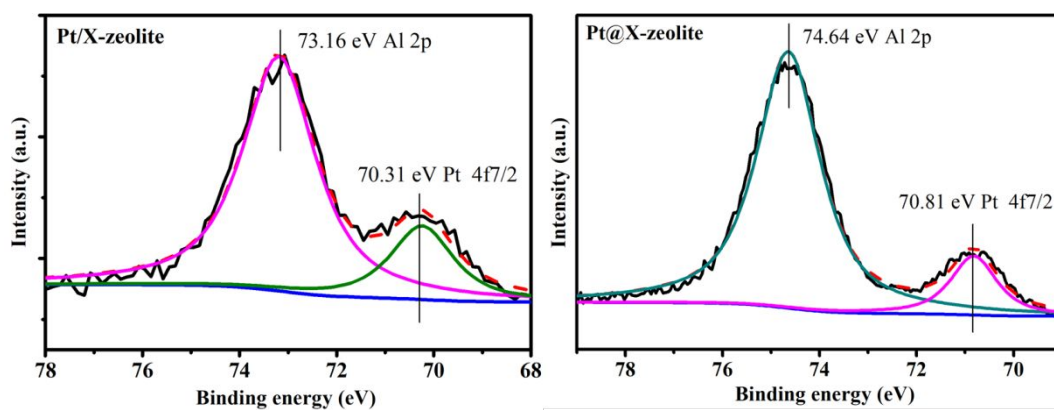


Figure S6. The Pt4f XPS results of Pt/X-zeolite and Pt@X-zeolite samples, the samples were reduced at 5.05 vol.% H₂/N₂ at 350°C for 0.5 h before XPS test.

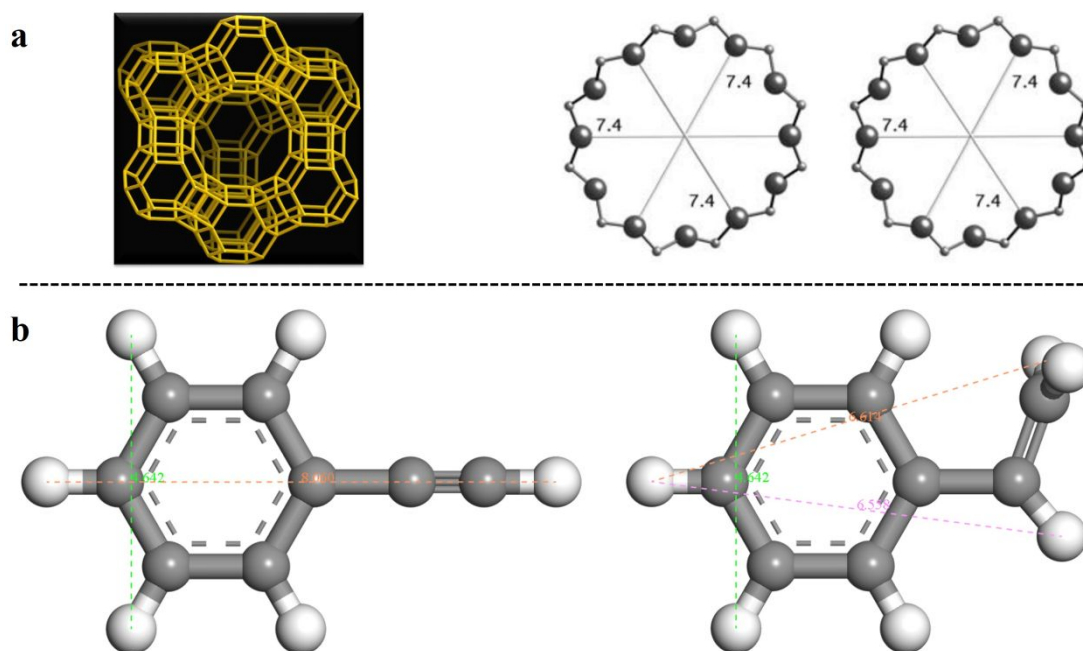


Figure S7. (a) The micro-model of X-zeolite and the size of 12-ring viewed along $\langle 111 \rangle$; (b) the structure and size of phenylacetylene and styrene measured by materials studio.

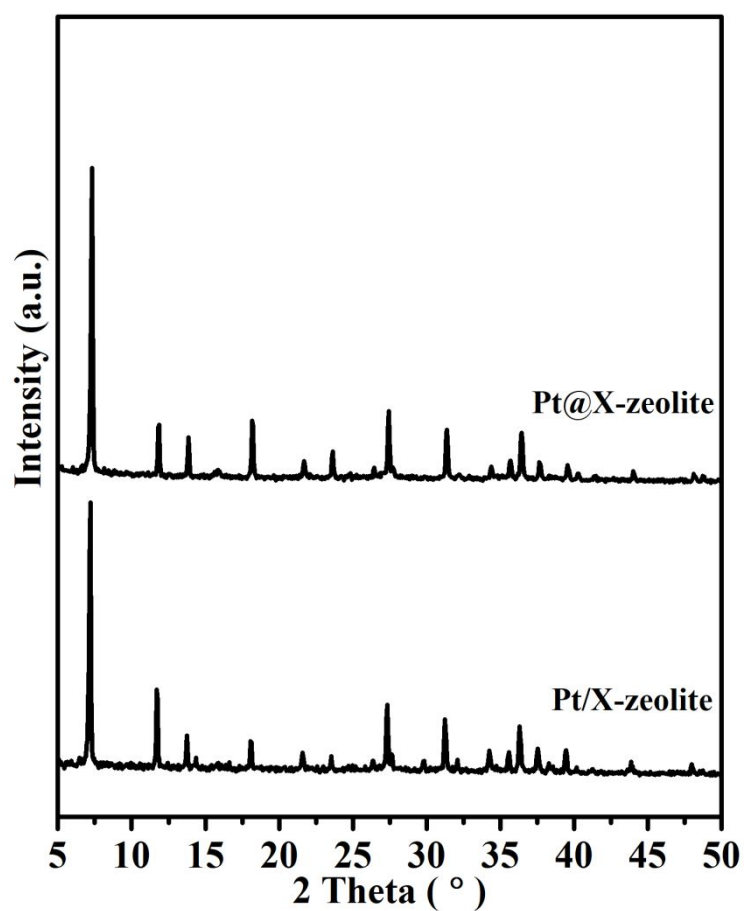


Figure S8. The X-ray diffraction spectra of Pt@X-zeolite and Pt/X-zeolite after reaction for ten cycles.