Supporting Information

Controllable deposition of Pt nanoparticles into KL zeolite by atomic layer deposition for highly efficient reforming of *n*-heptane to aromatics

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1. Preparation of 0.50 wt% Pt/KL catalyst by incipient wetness impregnation (IWI)

Supported Pt/KL catalyst with 0.50 wt% Pt loading was also prepared by the IWI method. In a typical synthesis, $Pt(NH_3)_4Cl_2$ was weighed, dissolved in de-ionized water, and impregnated over the dry support by slowly dropping the solution under air atmosphere for 12 h. Next, the mixture was dried in an oven at 120 ^oC overnight and then calcined at 350 ^oC for 4 h in static air to yield the final catalyst. The catalyst is denoted as 0.50 wt% Pt/KL.

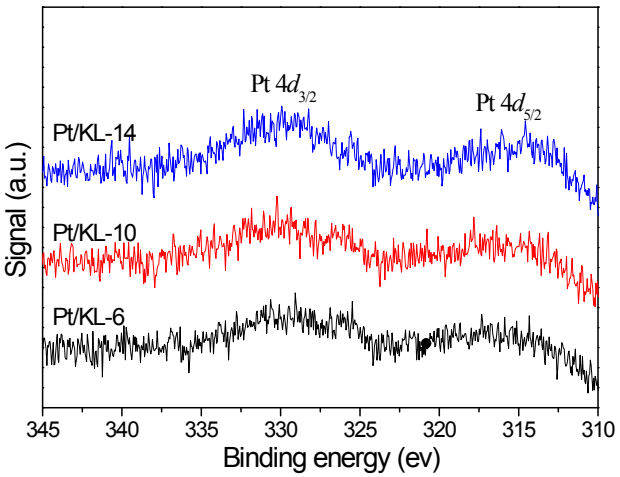

Fig. S1 XPS patterns of Pt4d photoemission spectra of Pt/KL catalysts

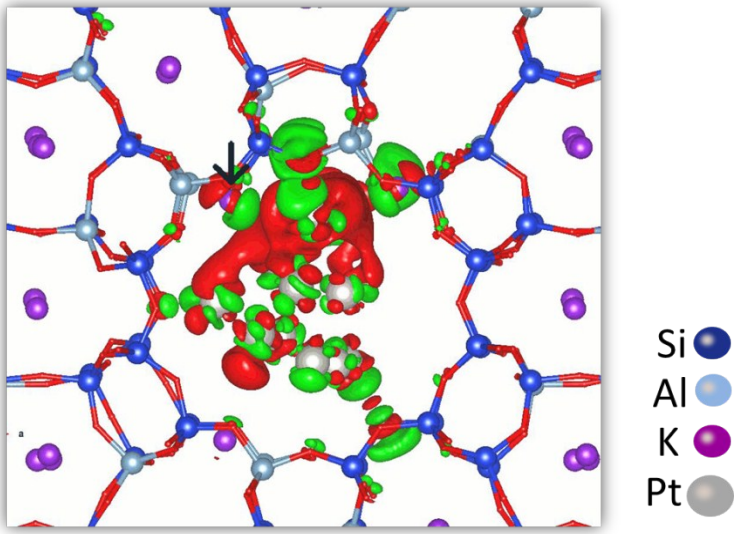

Fig. S2 Charge density difference in a Pt/KL sample

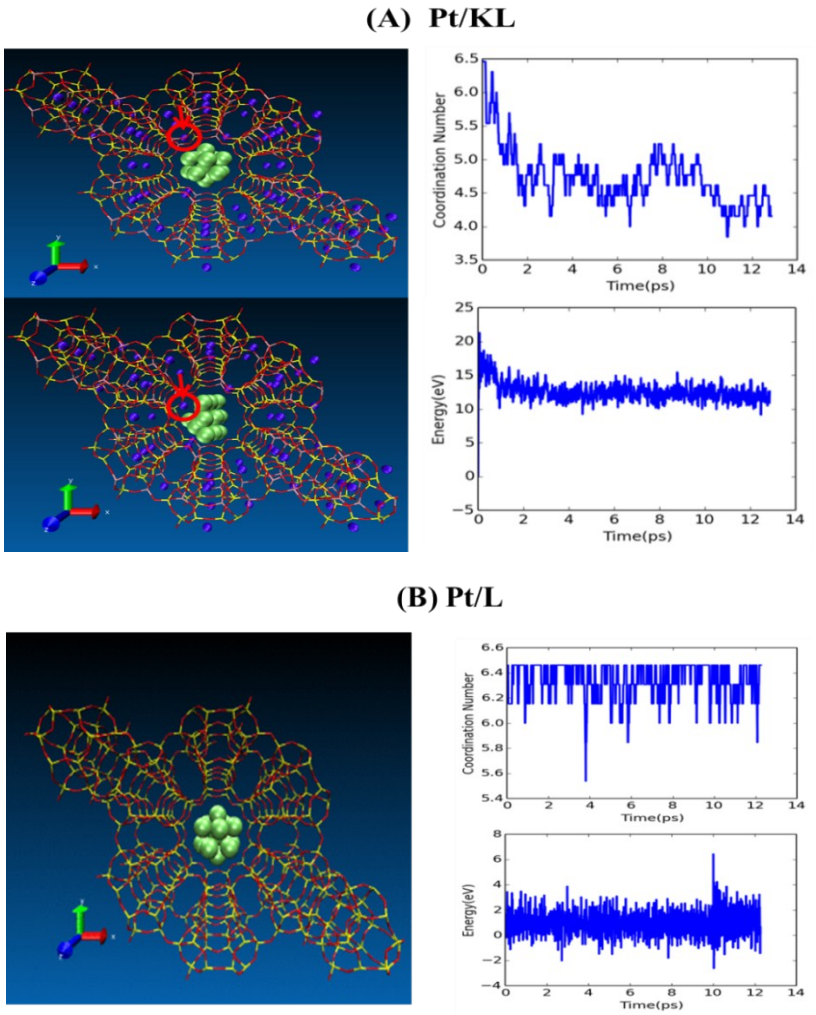

Fig. S3 AIMD simulation of Pt/KL (A) and Pt/L (B) catalysts

Fig. S3 shows the ab initio molecular dynamics (AIMD) simulation about the effect of K^+ cation on the morphology of Pt particle. Fig. S3(A) indicates that Pt particle inside KL zeolite channel could move easily and approach to K^+ cations, which may induce the translocation of K^+ position in the KL zeolite. When K^+ cation is removed from the KL zeolite, Pt particle keeps the isolated structure inside the L zeolite channel (Fig. S3(B)), which has a slight interaction with the zeolite.