Electronic Supplementary Information

Acidic Effect of Porous Alumina as Supports for Pt Nanoparticle Catalysts in *n*-Hexane Reforming

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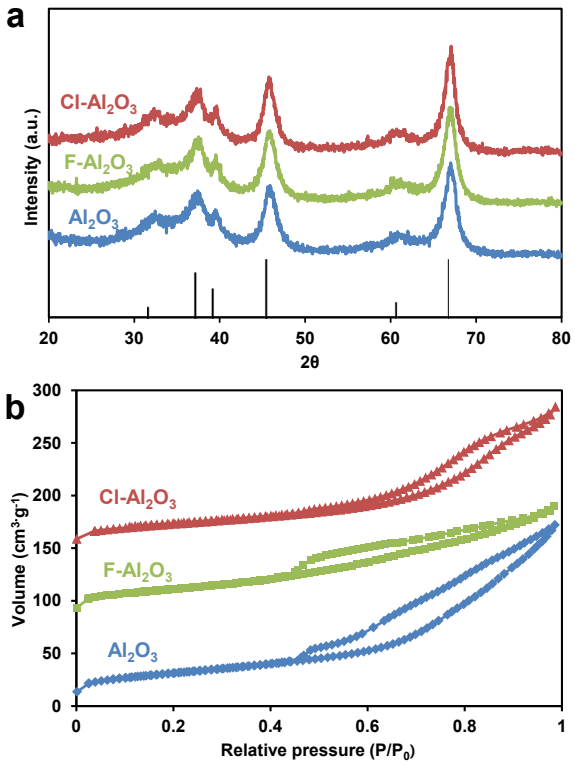

Fig. S1. (a) XRD patterns and (b) N_2 adsorption/desorption isotherms of porous Al_2O_3, Cl-Al_2O_3, and F-Al_2O_3.

Aluminas	Surface Area (m^2/g)	Pore Volume (cc/g)	Mesopore Size (nm)
Al_2O_3	112.3	0.266	9.48
Cl-Al_2O_3	83.74	0.208	9.93
F-Al_2O_3	111.2	0.171	6.14

Table S1. BET surface areas, pore volumes, and average pore sizes of porous aluminas.

Catalysts	Pt loading (wt%)	Rate (x 10^{-8} mol/s)	Rate (x 10^{-8} mol/s)	Selectivity (%) at 360 °C						
		360 °C	400 °C	Cracking	2MP	3MP	2,3-DMB	MCP	Olefin	Benzene
Pt/Al_2O_3	0.34	5.97	5.18	21.41	29.70	16.44	0.16	23.04	0.66	8.58
Pt/Cl-Al_2O_3	0.19	8.66	7.73	10.78	27.60	16.32	0	20.90	15.19	9.20
Pt/F-Al_2O_3	0.19	6.64	6.51	11.00	22.53	11.85	0	25.79	18.12	10.71

Table S2. Catalytic turnover frequencies and selectivities over Pt NP supported alumina catalysts in *n*-hexane reforming (140 Torr *n*-hexane and 620 Torr H_2).

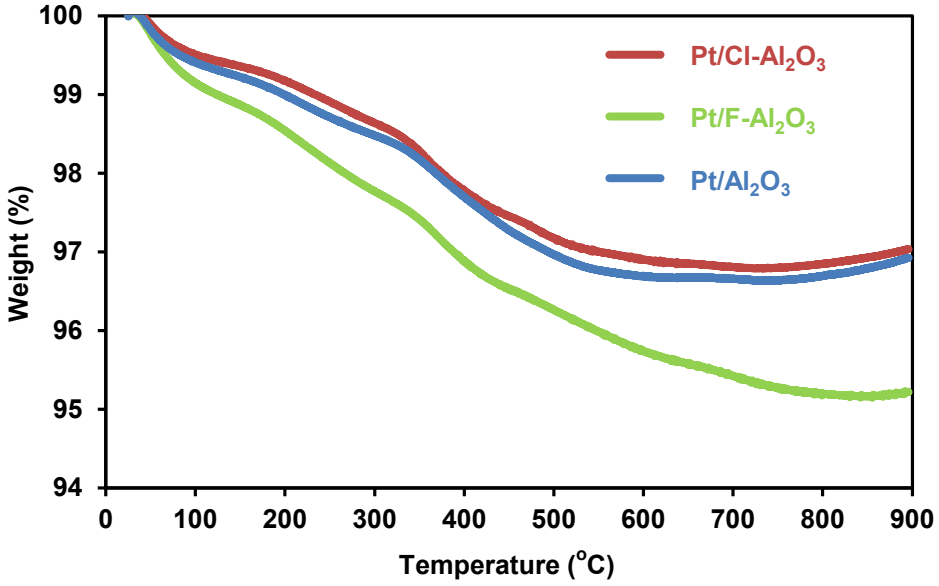

Fig. S2. TGA results of Pt/Al_2O_3, Pt/Cl-Al_2O_3, and Pt/F-Al_2O_3 without calcination after Pt NP loading to aluminas.

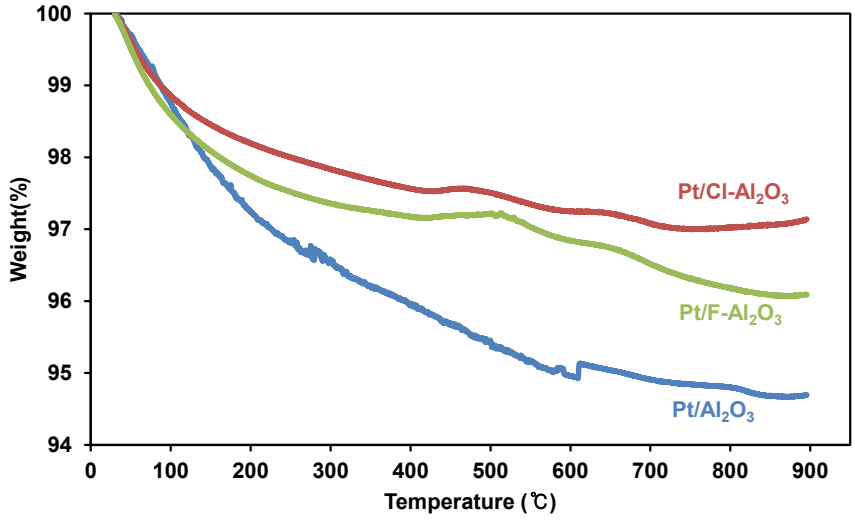

Fig. S3. TGA curves of normalized by weight loss rate for Pt/Al_2O_3 catalysts.

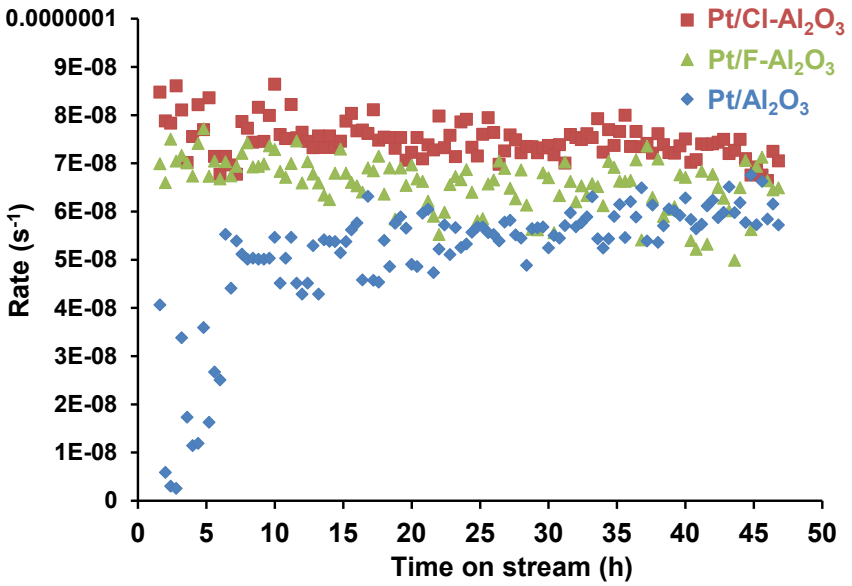

Fig. S4. Reaction rates in *n*-hexane reforming over Pt/Al_2O_3catalysts at 400 °C for 48 h.