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Electronic Supporting Information to:

The Synthesis of a Pt/SAPO-11 Composite with Trace Pt Loading and its Catalytic Application in *n*-Heptane Hydroisomerization

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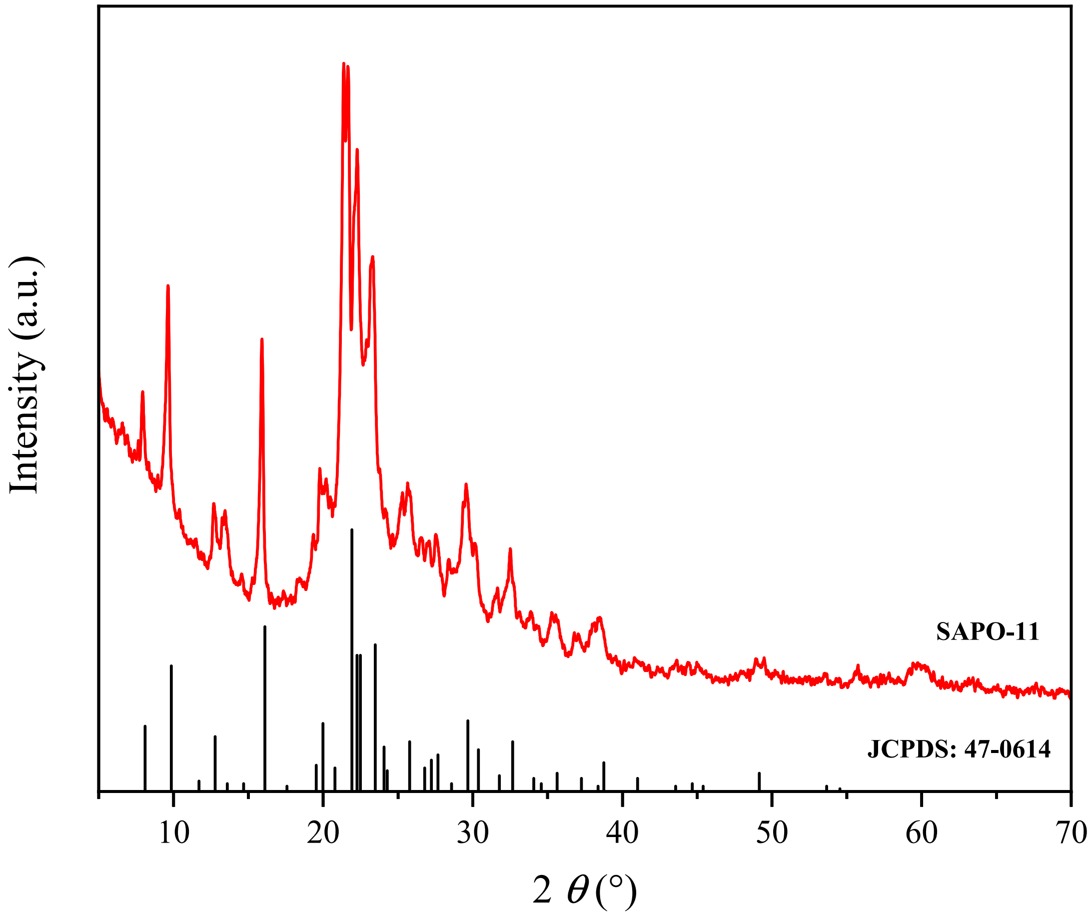

Figure S1. XRD of SAPO-11 and JCPDS:47-0614.

Sharp peaks of SAPO-11 appeared at the 2θ values of 17.9, 9.6, 12.6, 13.3, 15.9, 19.3, 19.8, 21.4, 21.6, 22.5, 23.1, 25.6, 29.6, 38.4, which were attributed to typical SAPO-11 topology structure card JCPDS 00-047-0614.

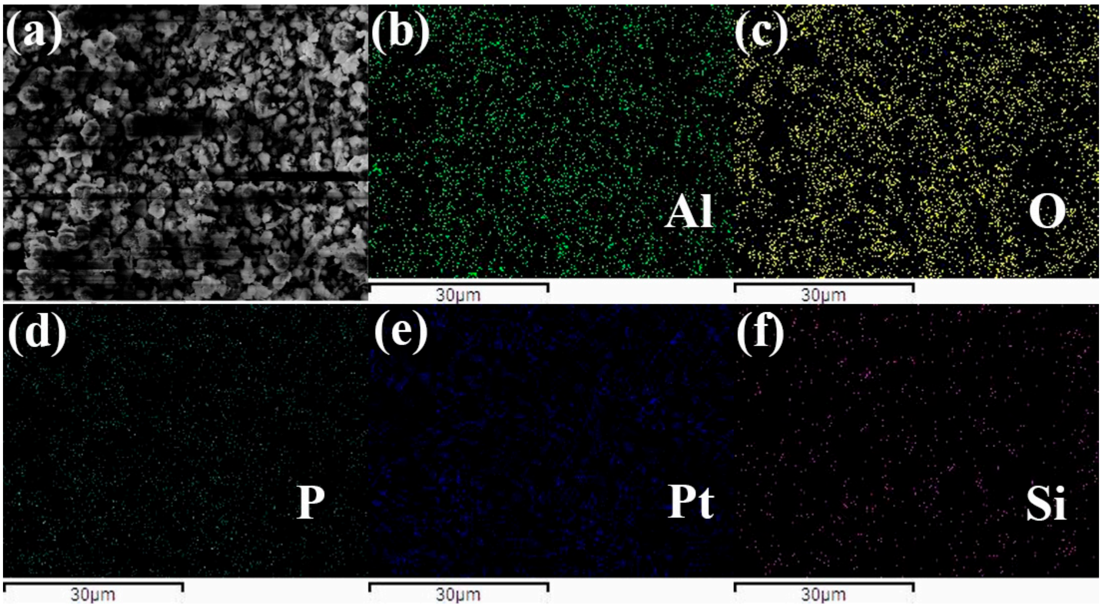

Figure S2. SEM of (**a**) SAPO-11 and EDS Mapping of (**b**) Al, (**c**) O, (**d**) P, (**e**) Pt and (**f**) Si element.

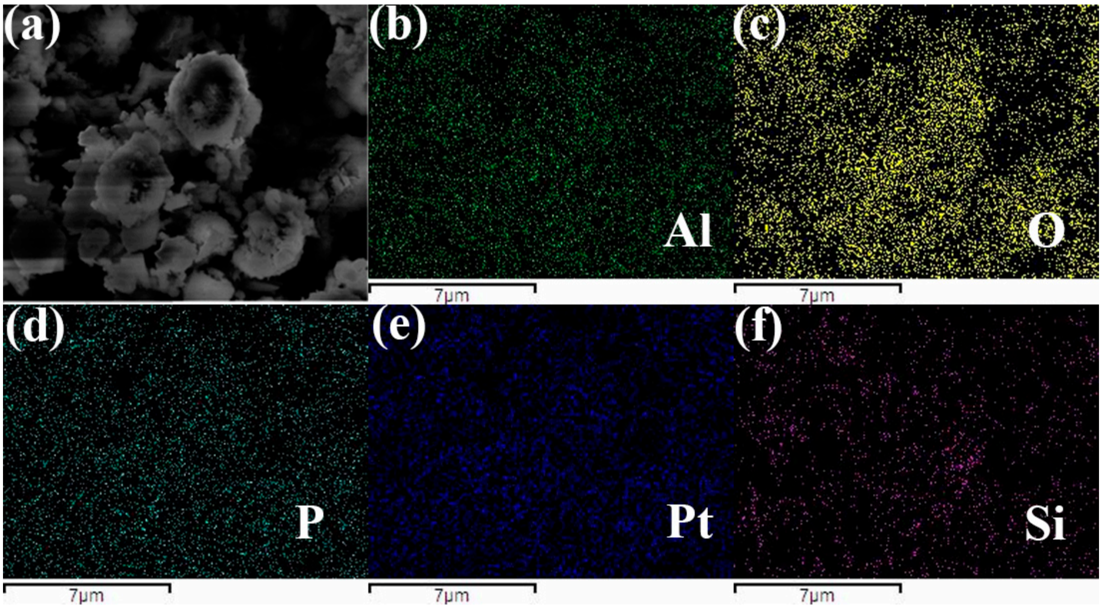

Figure S3. SEM of (**a**) 0.1Pt/SAPO-11 and EDS Mapping of (**b**) Al, (**c**) O, (**d**) P, (**e**) Pt and (**f**) Si element.

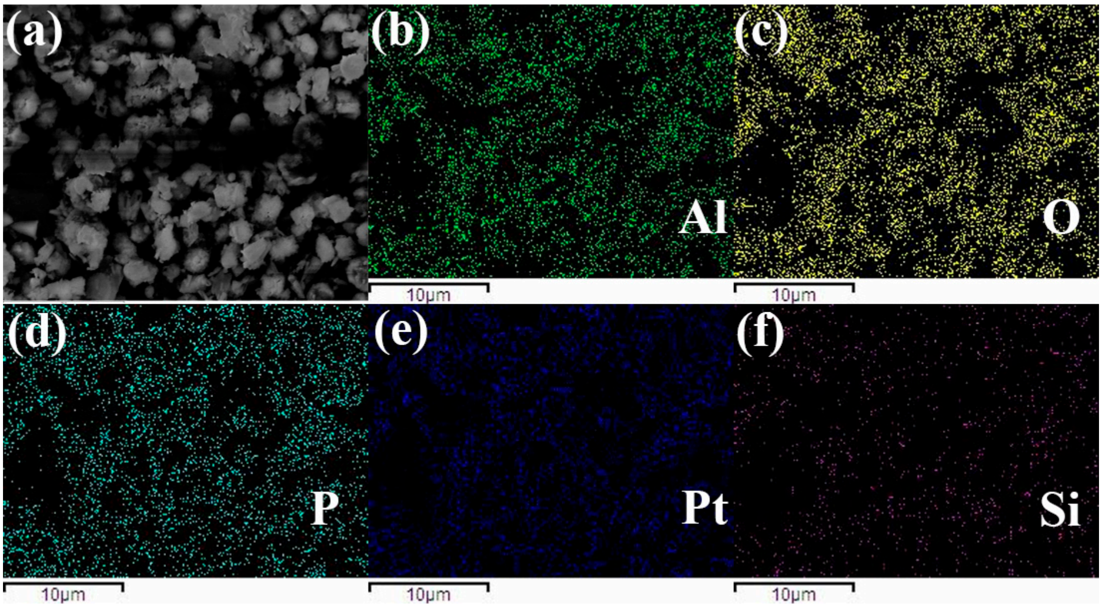

Figure S4. SEM of (**a**) 0.2Pt/SAPO-11 and EDS Mapping of (**b**) Al, (**c**) O, (**d**) P, (**e**) Pt and (**f**) Si element.

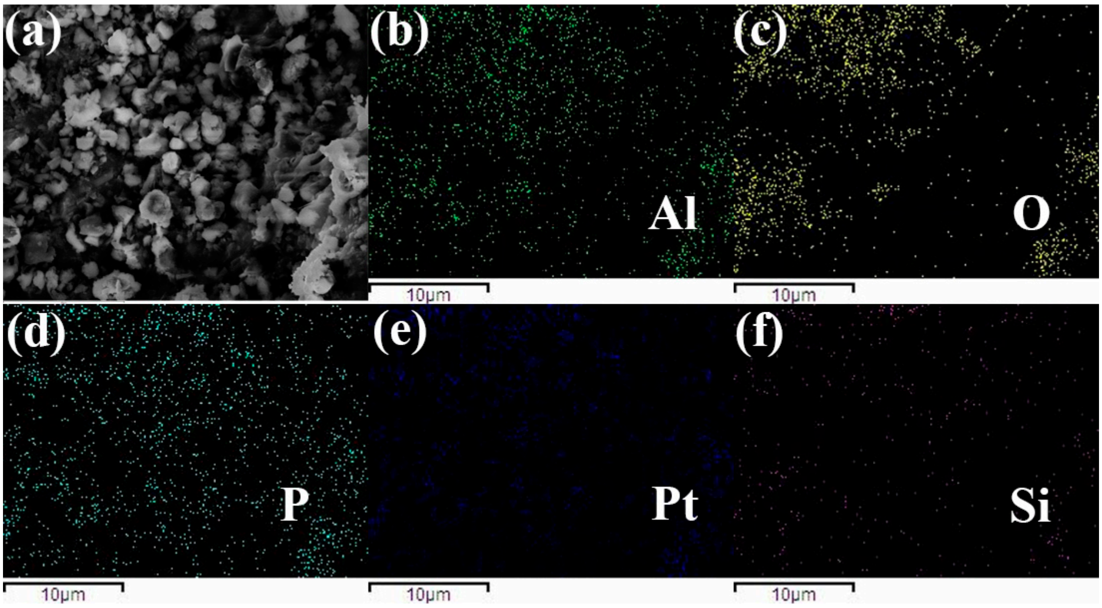

Figure S5. SEM of (**a**) 0.5Pt/SAPO-11 and EDS Mapping of (**b**) Al, (**c**) O, (**d**) P, (**e**) Pt and (**f**) Si element.

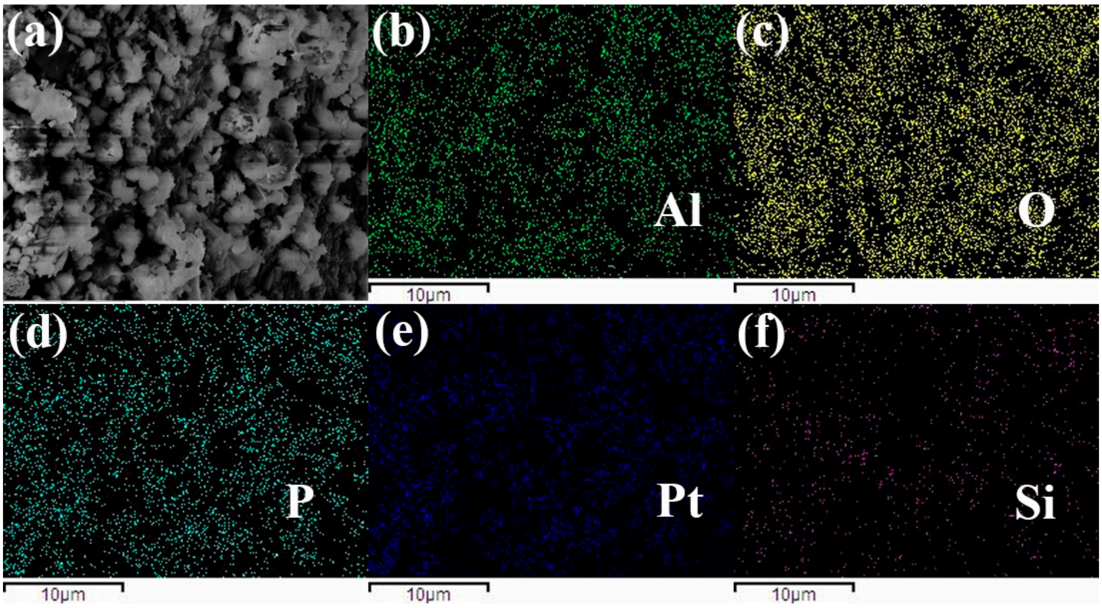

Figure S6. SEM of (**a**) 0.8Pt/SAPO-11 and EDS Mapping of (**b**) Al, (**c**) O, (**d**) P, (**e**) Pt and (**f**) Si element.

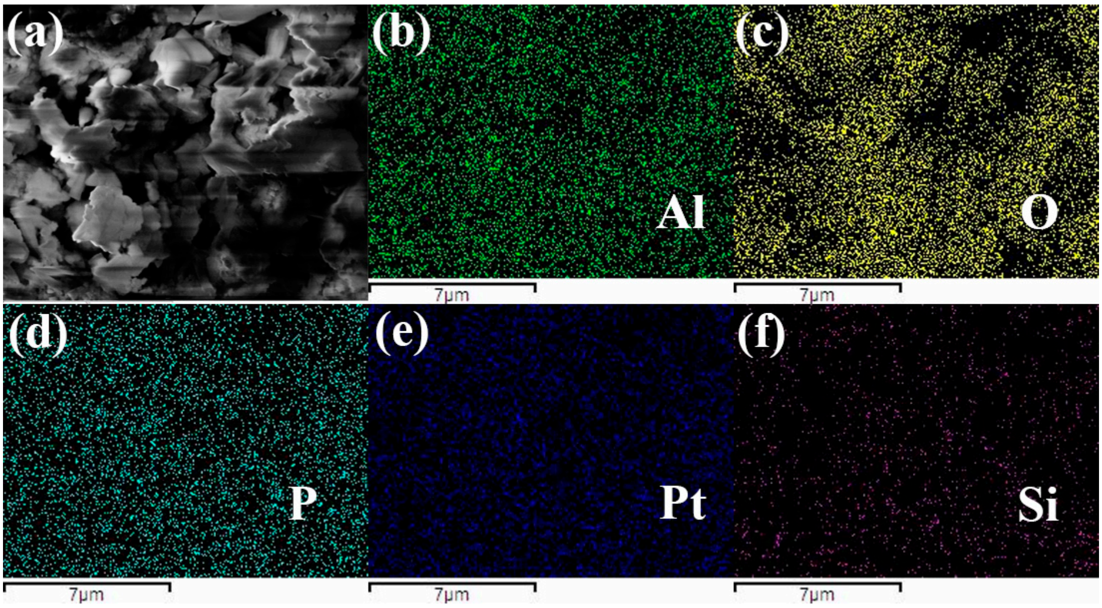

Figure S7. SEM of (**a**) 1.0Pt/SAPO-11 and EDS Mapping of (**b**) Al, (**c**) O, (**d**) P, (**e**) Pt and (**f**) Si element.

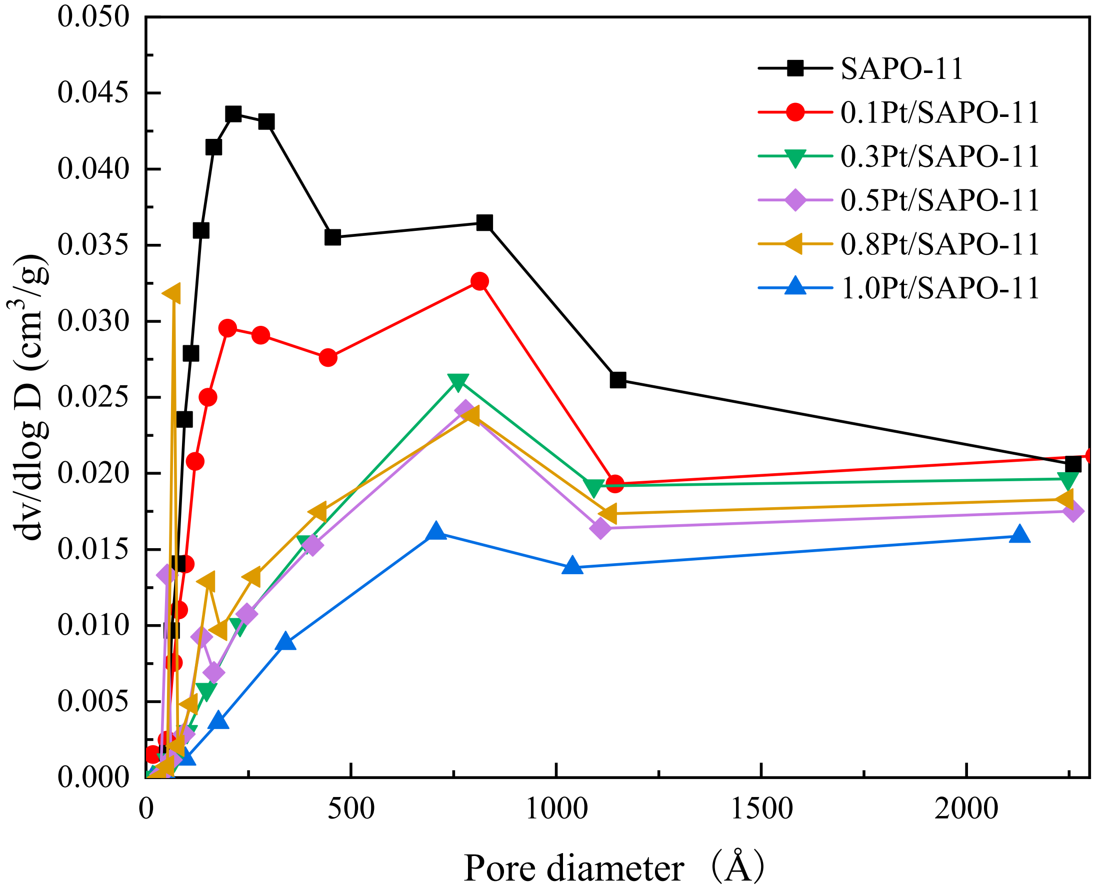

Figure S8. Pore diameter distributions of SAPO-11, 0.1Pt/SAPO-11, 0.2Pt/SAPO-11, 0.5Pt/SAPO-11, 0.8Pt/SAPO-11, 1.0Pt/SAPO-11.

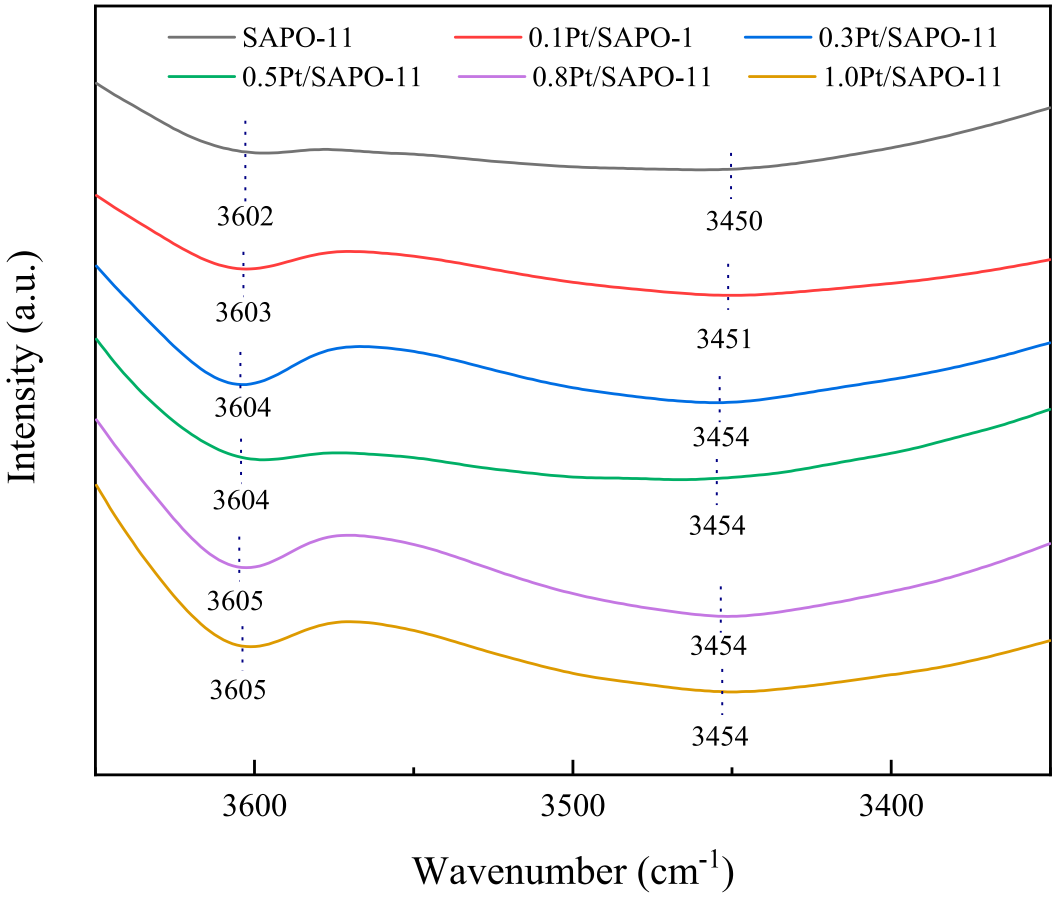

Figure S9. Partial enlarged FT-IR spectra of samples.

Compared with SAPO-11, stretching vibrations of Si-OH and Al–OH occurred slight blue shift of xPt/SAPO-11. For example, compared with SAPO-11, Si–OH–Al stretching vibrations of 0.5Pt/SAPO-11 blue shifted from 3602 cm^{-1} to 3604 cm^{-1}, and Al–OH stretching vibrations of 0.5Pt/SAPO-11 blue shifted from 3450 cm^{-1} to 3454 cm^{-1}.

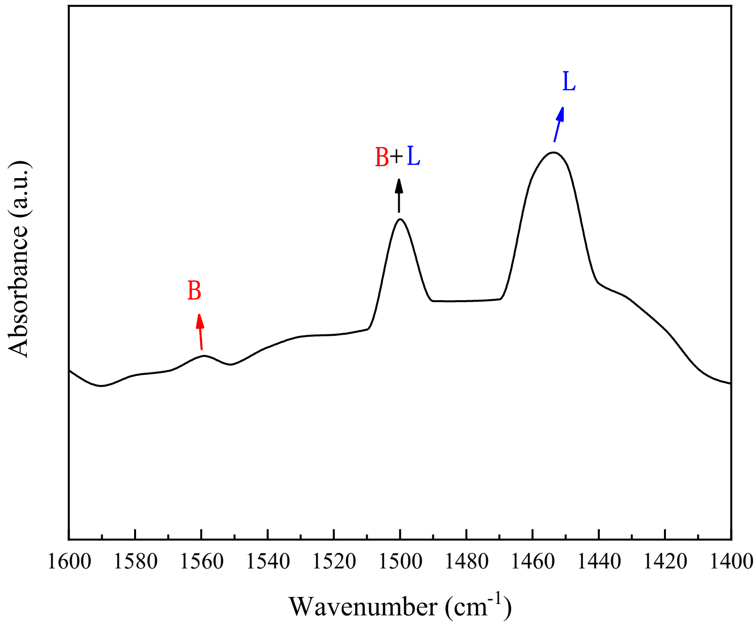

Figure S10. Py-IR spectra of 0.5Pt/SAPO-11, B represents for Brønsted acid, L represents for Lewis acid.

Bands located around 1560 cm^{-1} and 1455 cm^{-1} were assigned to Brønsted acid site and Lewis acid site, respectively, while the peak around 1500 cm^{-1} was attributed to the interaction between Lewis and Brønsted acid site.

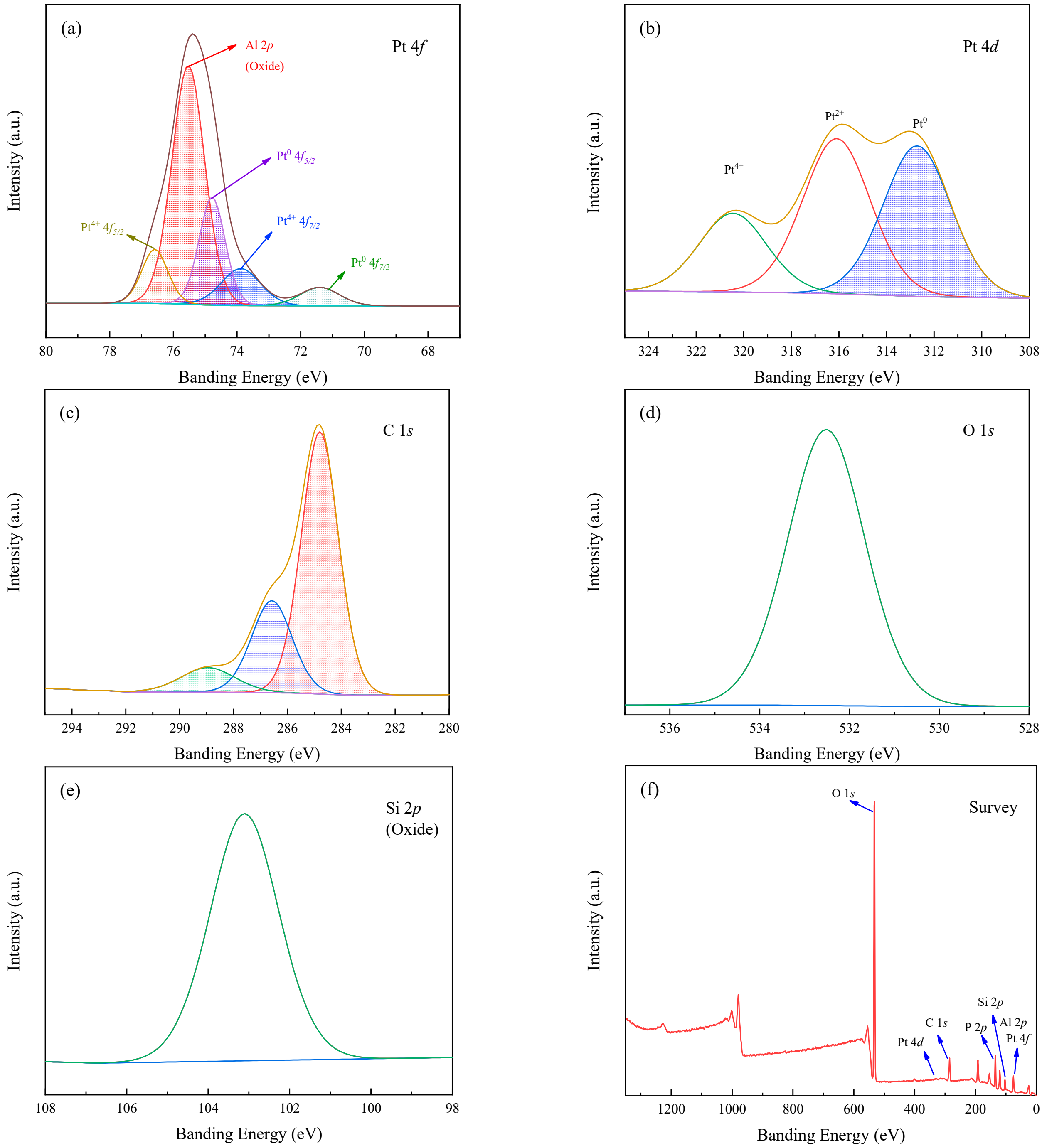

Figure S11. XPS spectra of s0.5Pt/SAPO-11.

Table S1. Comparison of catalysts reported in literature.

Catalyst	*n*-alkanes	Reaction conditions			Catalytic performance	Reference
		T(°C)	Pressure	WHSV (h^{-1})		
0.5Pt/SAPO-11	*n*-heptane	310	0.1 MPa	6.8	65% isomer selectivity at 77% conversion	This work
0.5%Pt/SAPO-11	*n*-heptane	327	1 bar	1.0	≈80% isomer selectivity at 92% conversion	**1**
1.5Pt/H-MOR	*n*-hexane	275	1 bar	0.25	≈60% isomer selectivity at 58% conversion	**2**
Pt/SAPO-11	*n*-octane	340	2 MPa	1.0	≈82% isomer selectivity at 89% conversion	**3**
Pt-Cl	*n*-dodecane	320	0.1 MPa	4.0	≈75% isomer selectivity at 64% conversion	**4**
0.2%Pt/50%S-Al	bio-aviation fuel	340	3 MPa	0.8	≈62% isomer selectivity at 100% conversion	**5**
0.5%Pt/SAPO-11	*n*-dodecane	340	8 MPa	1.0	≈50% isomer selectivity at 87% conversion	**6**
0.5%Pt/ZSM-22	*n*-hexadecane	310	4 MPa	1.0	≈70% isomer selectivity at 70% conversion	**7**
0.5Pt/siliceous ZSM-22	*n*-dodecane	330	4 MPa	1.2	≈78% isomer selectivity at 95% conversion	**8**
V-0.15%Pt/SAPO-11	*n*-hexadecane	315	2 MPa	3.1	≈94.4% isomer selectivity at 94.3% conversion	**9**

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