Supporting Information

Regulating Pd/Al_2O_3 catalyst by g-C_3N_4 toward enhanced selectivity of isoprene hydrogenation

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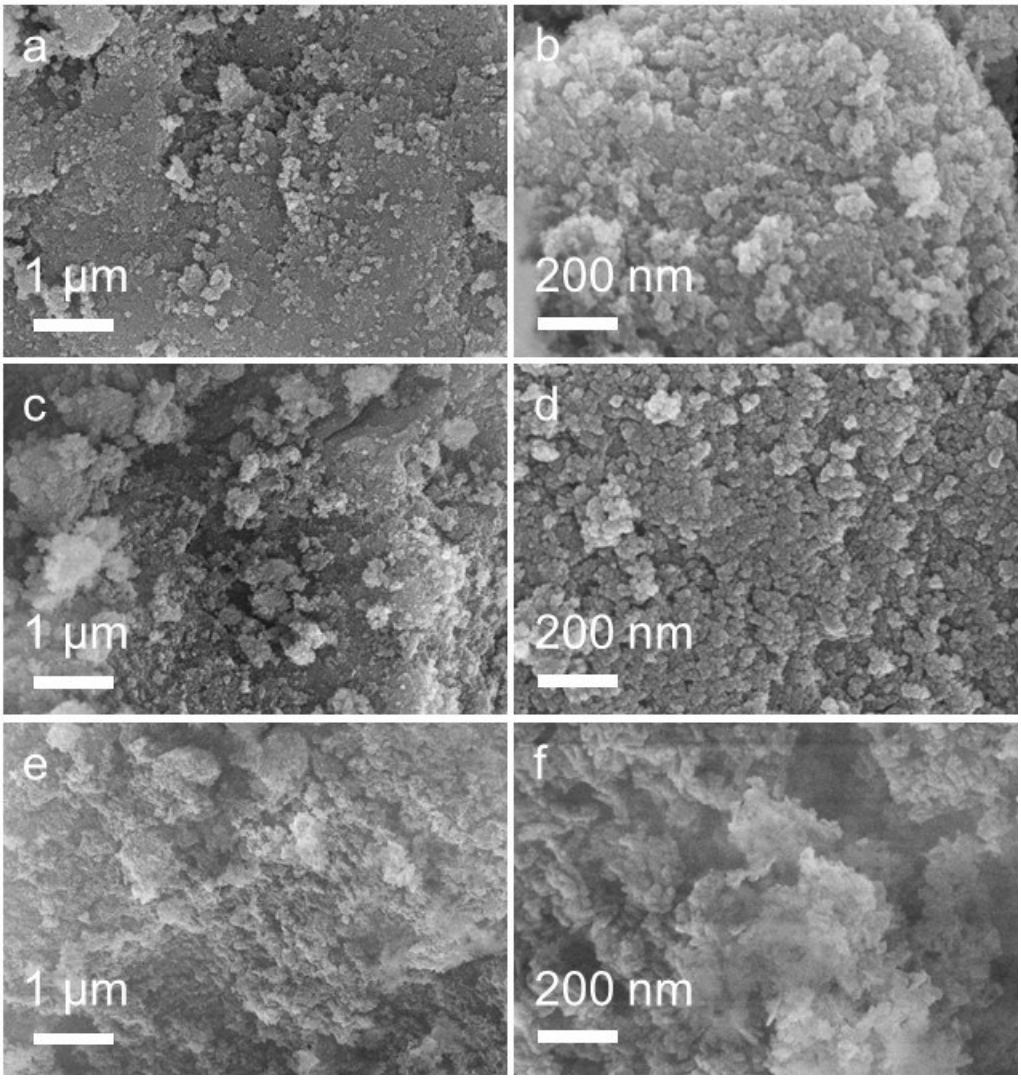

Figure S1. SEM images of (a, b) Al_2O_3, (c, d) RMS and (e, f) FZC (All of the supports were calcined at 800 °C).

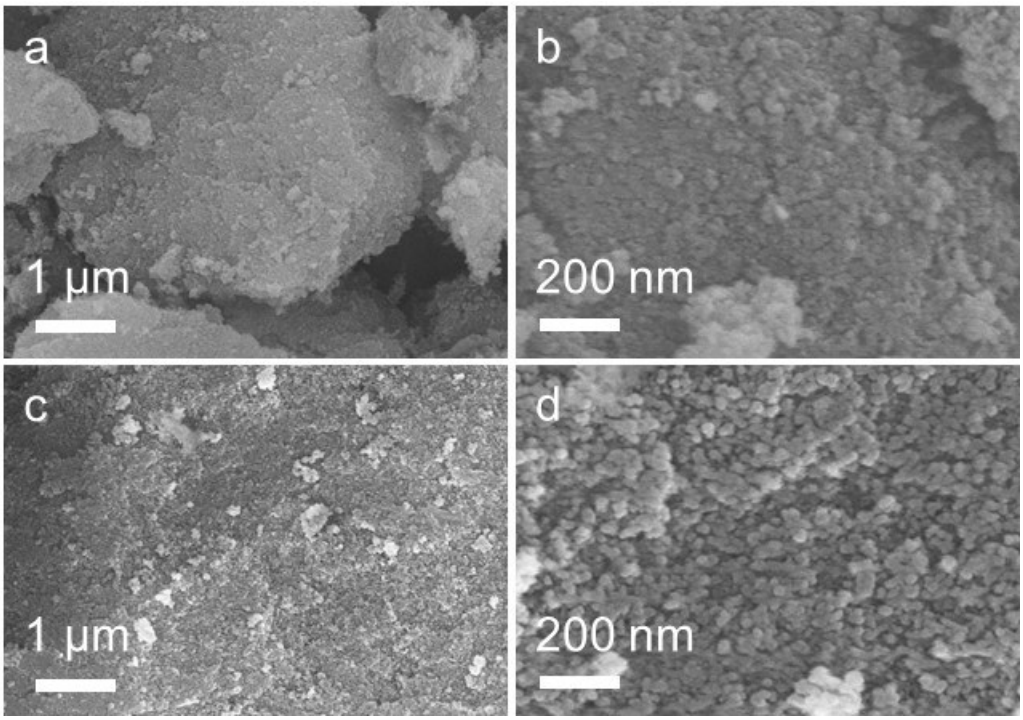

Figure S2. SEM images of (a, b) Pd/Al_2O_3 and (c, d) Pd/Al_2O_3-U7.

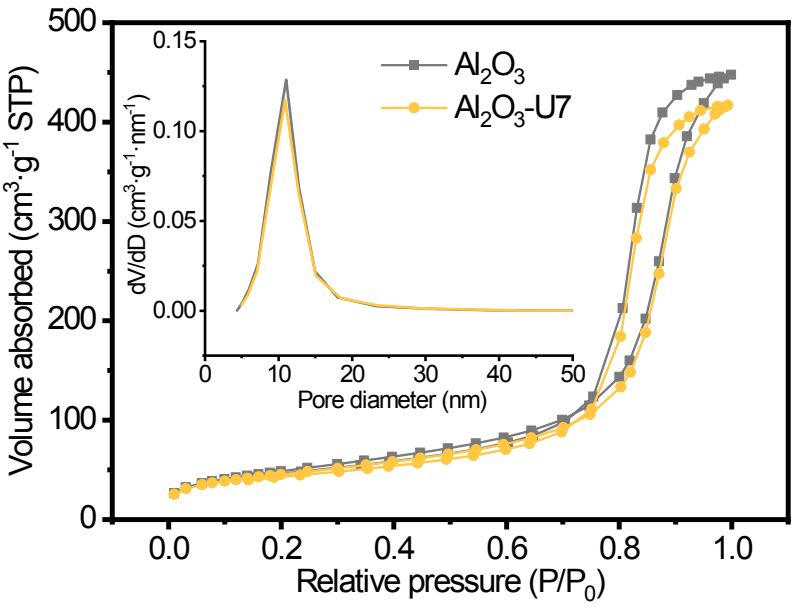

Figure S3. N_2 adsorption-desorption isotherms and pore-size distribution curves (insets) of Al_2O_3 and Al_2O_3-U7.

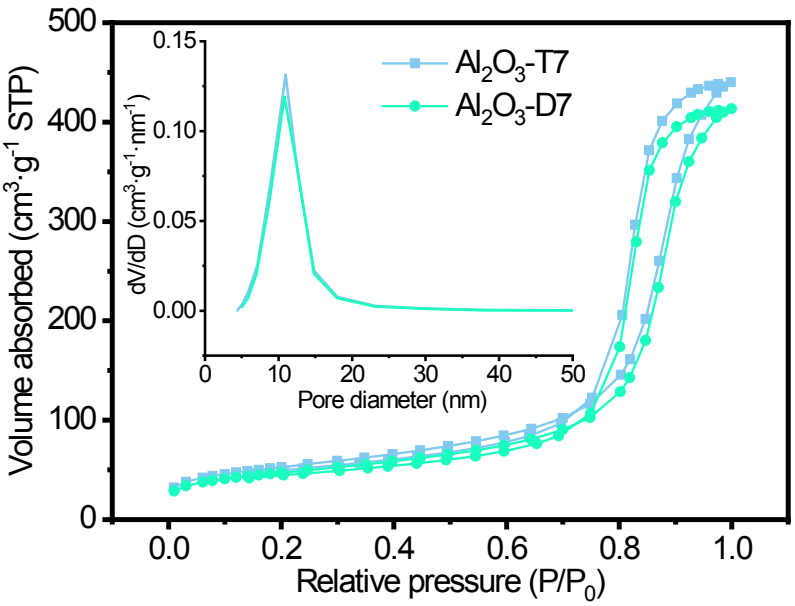

Figure S4. N_2 adsorption-desorption isotherms and pore-size distribution curves (insets) of Al_2O_3-T7 and Al_2O_3-D7.

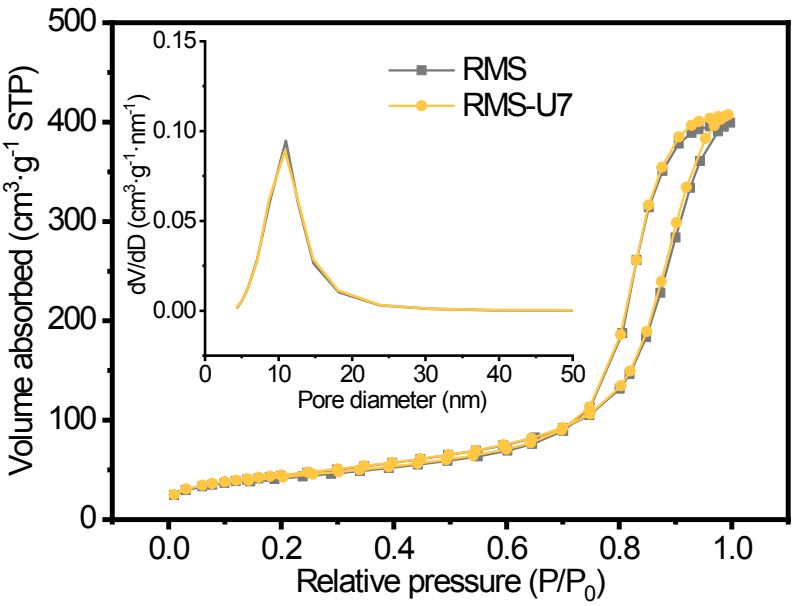

Figure S5. N_2 adsorption-desorption isotherms and pore-size distribution curves (insets) of RMS and RMS-U7.

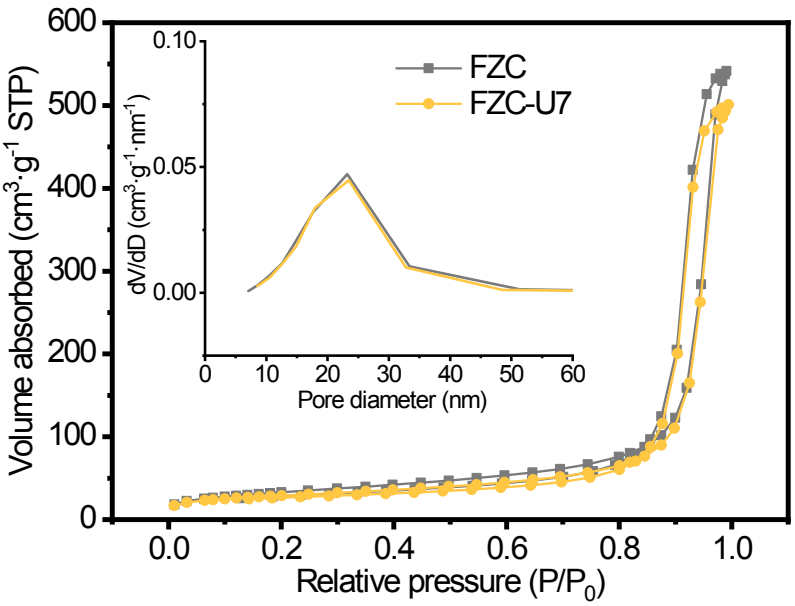

Figure S6. N_2 adsorption-desorption isotherms and pore-size distribution curves (insets) of FZC and FZC-U7.

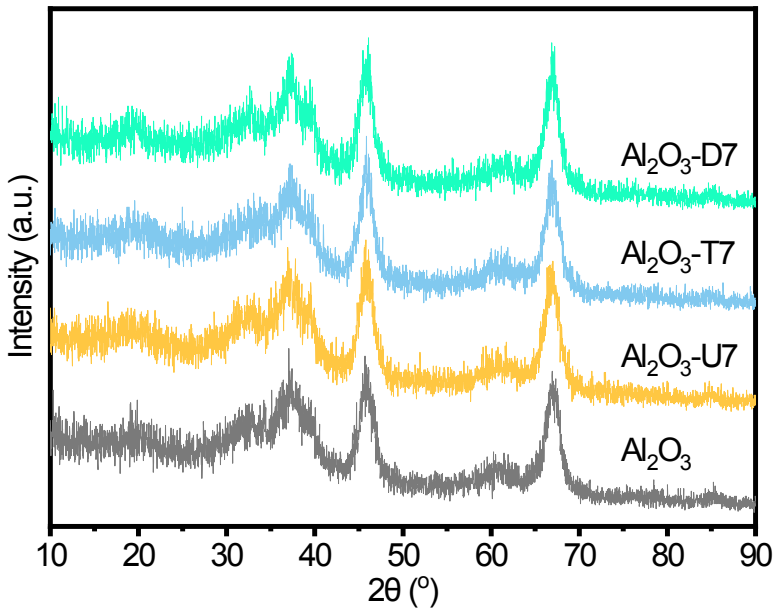

Figure S7. The XRD patterns of Al_2O_3, Al_2O_3-U7, Al_2O_3-T7 and Al_2O_3-D7.

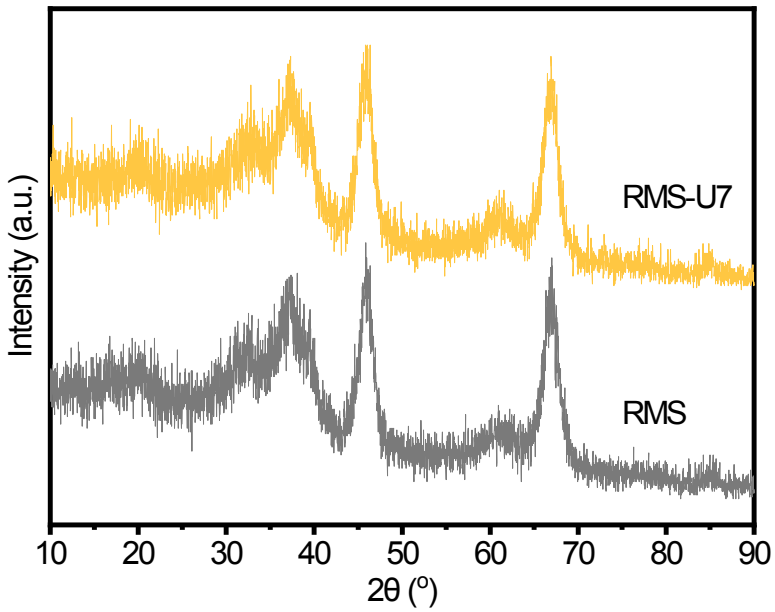

Figure S8. The XRD patterns of RMS and RMS-U7.

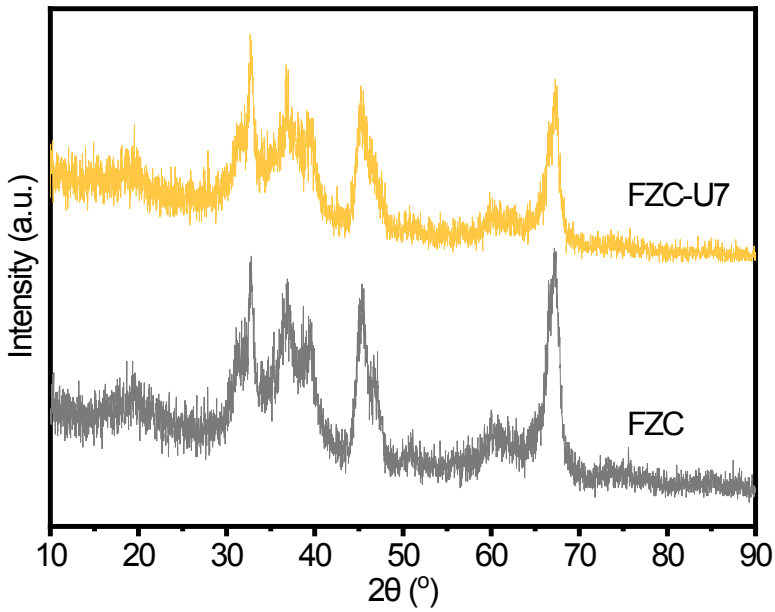

Figure S9. The XRD patterns of FZC and FZC-U7.

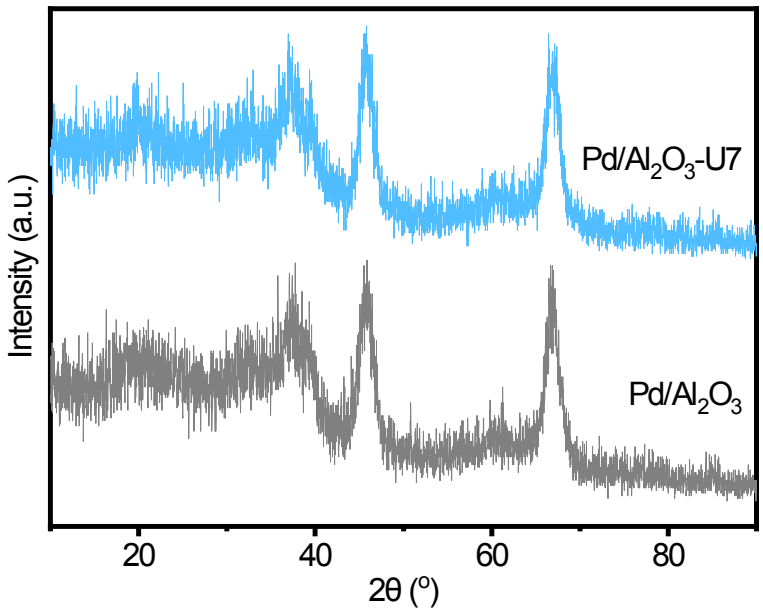

Figure S10. The XRD patterns of Pd/Al_2O_3 and Pd/Al_2O_3-U7.

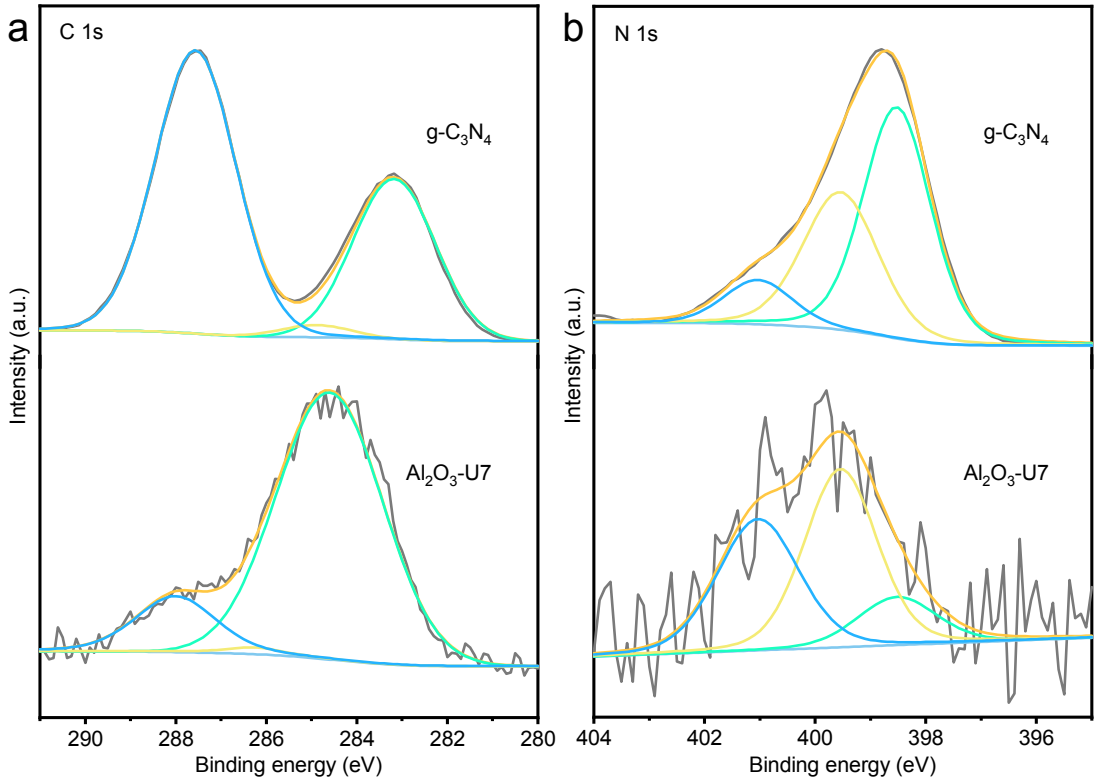

Figure S11. The XPS spectra of (a) C 1s and (b) N 1s of the g-C_3N_4 (prepared by pyrolysis of urea) and Al_2O_3-U7.

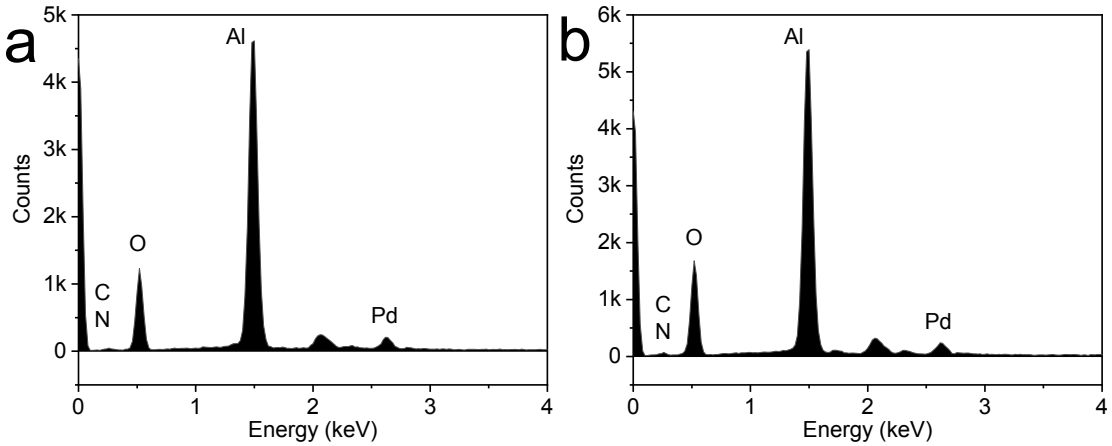

Figure S12. The EDS patterns of (a) Pd/Al_2O_3 and (b) Pd/Al_2O_3-U7.

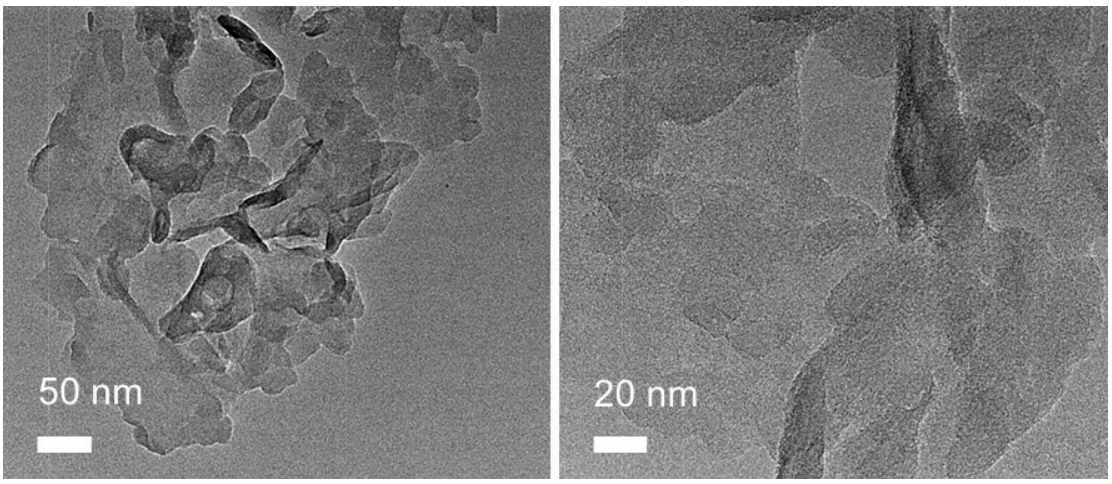

Figure S13. The HRTEM images of g-C_3N_4.

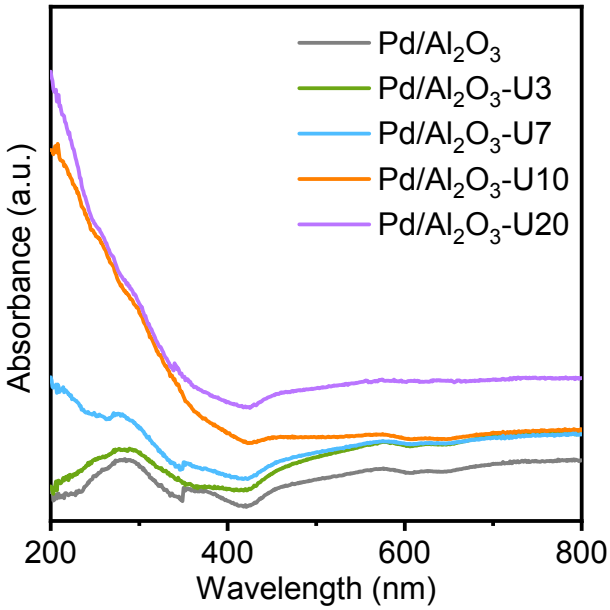

Figure S14. The UV-vis DRS spectra of Pd/Al_2O_3, Pd/Al_2O_3-U3, Pd/Al_2O_3-U7, Pd/Al_2O_3-U10 and Pd/Al_2O_3-U20.

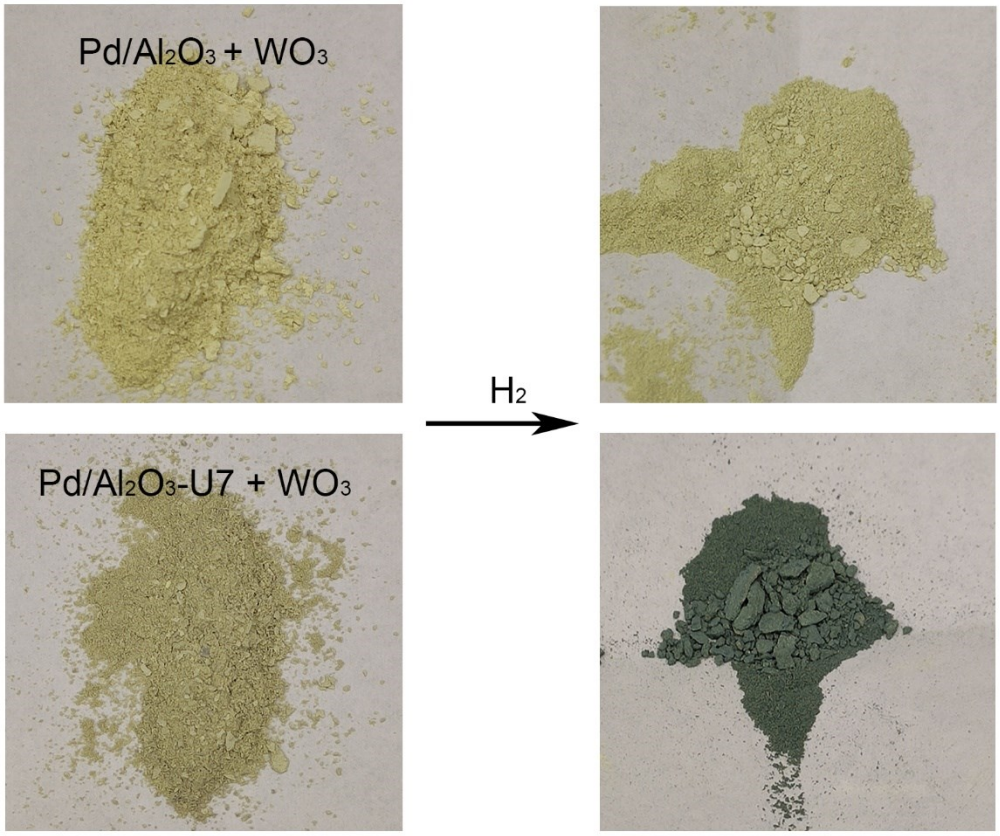

Figure S15. The digital images of $Pd/Al_2O_3+WO_3$ and Pd/Al_2O_3-U7+WO_3 before (left) and after (right) hydrogen treatments.

Table S1. Texture properties of the alumina supports.

Supports	BET Surface Area ($m^2\ g^{-1}$)	Pore Volume ($cm^3\ g^{-1}$)	Pore Size (nm)
Al_2O_3	177	0.69	10.9
Al_2O_3-U7	164	0.65	11.0
Al_2O_3-T7	188	0.68	10.9
Al_2O_3-D7	168	0.64	11.0
RMS	160	0.62	10.9
RMS-U7	162	0.63	11.1
FZC	119	0.84	22.1
FZC-U7	104	0.78	22.0

Table S2. The Pd content of Pd/Al_2O_3 and Pd/Al_2O_3-U7 determined by ICP-OES.

Samples	Content of Pd (%)
Pd/Al_2O_3	0.16
Pd/Al_2O_3-U7	0.16

Table S3. The deconvolution results of C 1s and N 1s XPS spectra of Pd/Al_2O_3 and Pd/Al_2O_3-U7.

Samples	Atomic percentage (%)			
	sp^2-bonded carbon	sp^2-bonded aromatic N	tertiary N groups	quaternary N bonded three carbon
Pd/Al_2O_3	-	-	-	-
Pd/Al_2O_3-U7	0.17	0.09	0.51	0.40

Table S4. EDS elemental analysis of Pd/Al_2O_3 and Pd/Al_2O_3-U7.

Samples	Atomic percentage (%)				
	C	N	O	Al	Pd
Pd/Al_2O_3	5.23	1.95	51.95	40.64	0.24
Pd/Al_2O_3-U7	9.51	2.27	52.83	35.16	0.24