

Supporting Information

Performance of palladium and platinum supported on alumina pillared clays in the catalytic combustion of propene

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Table S1. Textural properties derived from N₂ adsorption at -196°C and CO₂ adsorption at 0°C.

Catalyst	S _{Lang} ¹ (m ² /g)	S _{ext} ² (m ² /g)	S _{μp} (N ₂) ³ (m ² /g)	V _p ⁴ (cm ³ /g)	V _{μp} (N ₂) ⁵ (cm ³ /g)	V _{μp} (CO ₂) ⁵ (cm ³ /g)	V _{mp} (N ₂) ⁶ (cm ³ /g)
Al-PILC	212	13	199	0.113	0.080	0.054	0.033
0.1Pd	162	10	152	0.086	0.061	0.055	0.025
0.5Pd	168	10	158	0.090	0.063	0.054	0.027
1Pd	156	11	145	0.085	0.059	0.052	0.026
2Pd	151	11	140	0.066	0.057	0.050	0.009
0.1Pt	150	11	139	0.083	0.056	0.055	0.027
0.5Pt	150	13	137	0.087	0.057	0.054	0.030
1Pt	128	12	116	0.076	0.048	0.051	0.028
2Pt	74	9	65	0.050	0.028	0.053	0.022

¹ Specific surface area calculated using the Langmuir equation ($0.01 < p/p^0 < 0.05$), ² Specific external surface area obtained from the *t*-plot method, ³ Specific micropore surface area, ⁴ Specific total pore volume at a p/p^0 of 0.99, ⁵ Specific micropore volume derived from the Dubinin-Radushkevich (DR) equation, ⁶ Specific mesopore volume.

Table S2. Chemical and metal properties derived from ammonia adsorption at 70°C and carbon monoxide and hydrogen adsorption at 35°C.

Catalyst	V(NH ₃) ¹ (mmol/g)	D(H ₂) ² (%)	S _{Met} (H ₂) ³ (m ² /g)	dp(H ₂) ⁴ (nm)	D(CO) ² (%)	S _{Met} (CO) ³ (m ² /g)	dp(CO) ⁴ (nm)	Metal content ⁵ (wt.%)
Na-Mont	0.05	--	--	--	--	--	--	--
Al-PILC	0.26	--	--	--	--	--	--	--
0.1Pd	0.28	--	--	--	29.7	0.11	3.8	0.08
0.5Pd	0.28	--	--	--	9.6	0.21	11.7	0.50
1Pd	0.31	6.0	0.28	18.7	5.6	0.26	20.0	1.06
2Pd	0.29	5.3	0.50	21.1	4.5	0.41	24.9	2.03
0.1Pt	0.28	1.5	0,004	75.5	29.9	0.07	3.8	0.09
0.5Pt	0.26	12.6	0.16	9.0	19.0	0.24	6.0	0.49
1Pt	0.27	13.0	0.33	8.7	17.6	0.45	6.4	0.99
2Pt	0.18	11.8	0.62	9.6	12.8	0.67	8.8	2.01

¹ Ammonia adsorption volume, ² Metal dispersion, ³ Metal surface area, ⁴ Mean size of the metal particles, ⁵ Metal content from chemical analyses.

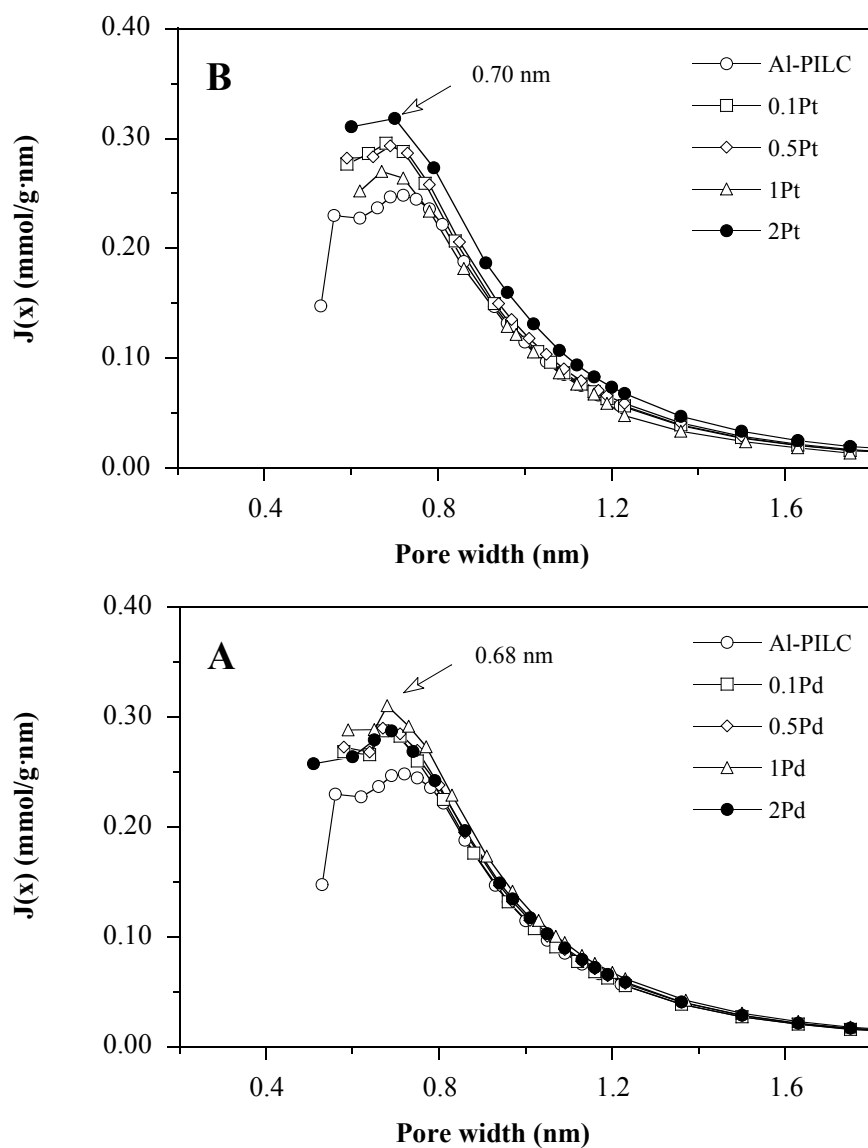


Figure S1. Micropore-size distributions (MPSDs) derived from the Jaroniec-Gadkaree-Choma model. (A) Pd/Al-PILCs, (B) Pt/Al-PILCs.

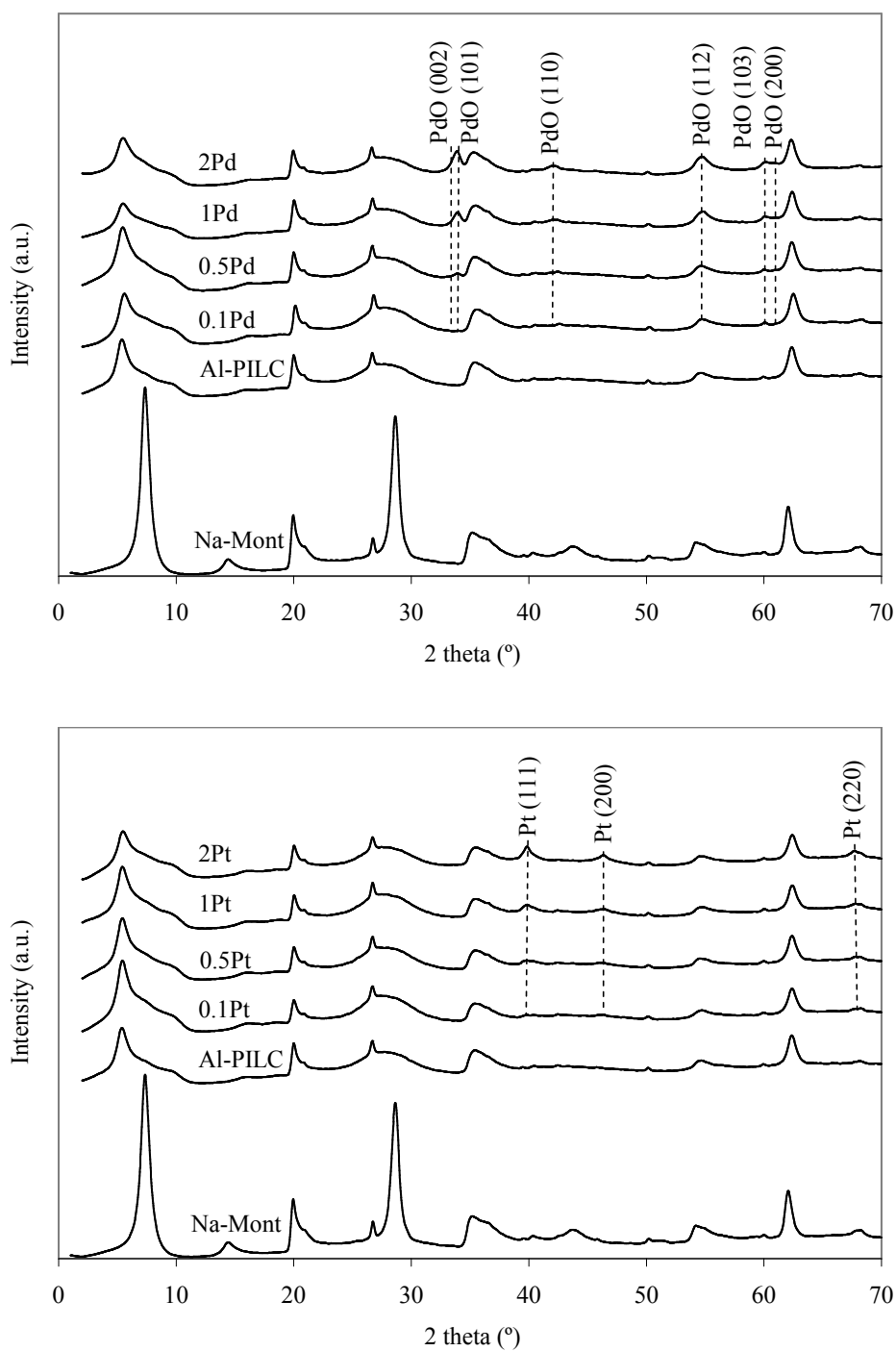


Figure S2. XRD patterns of the Pd/Al-PILC and Pt/Al-PILC catalysts.

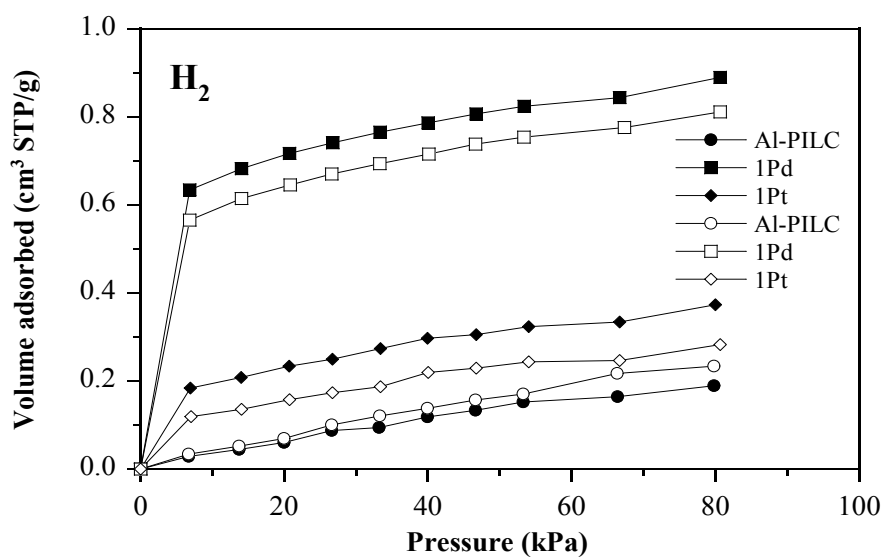
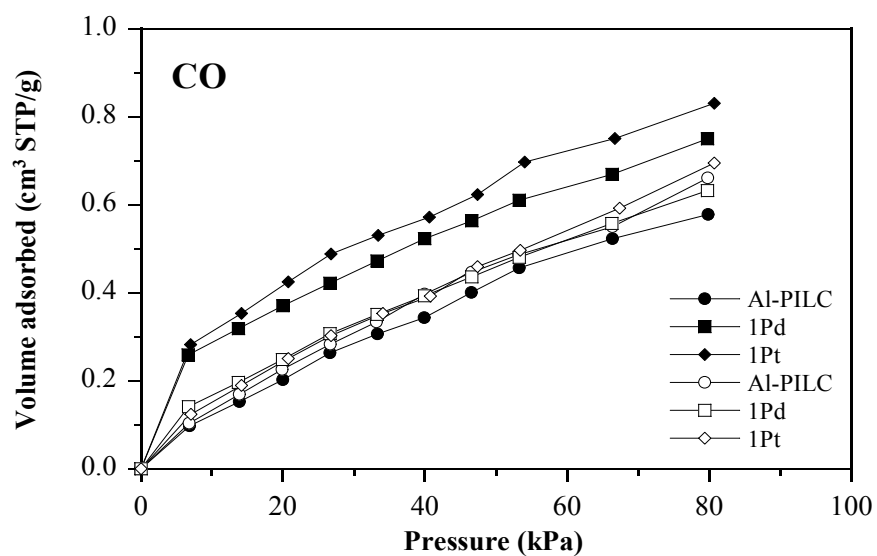


Figure S3. Total (●,■,◆) and reversible (○,□,◇) carbon monoxide and hydrogen adsorption at 35°C on selected catalysts and the support, after reduction at 360°C.

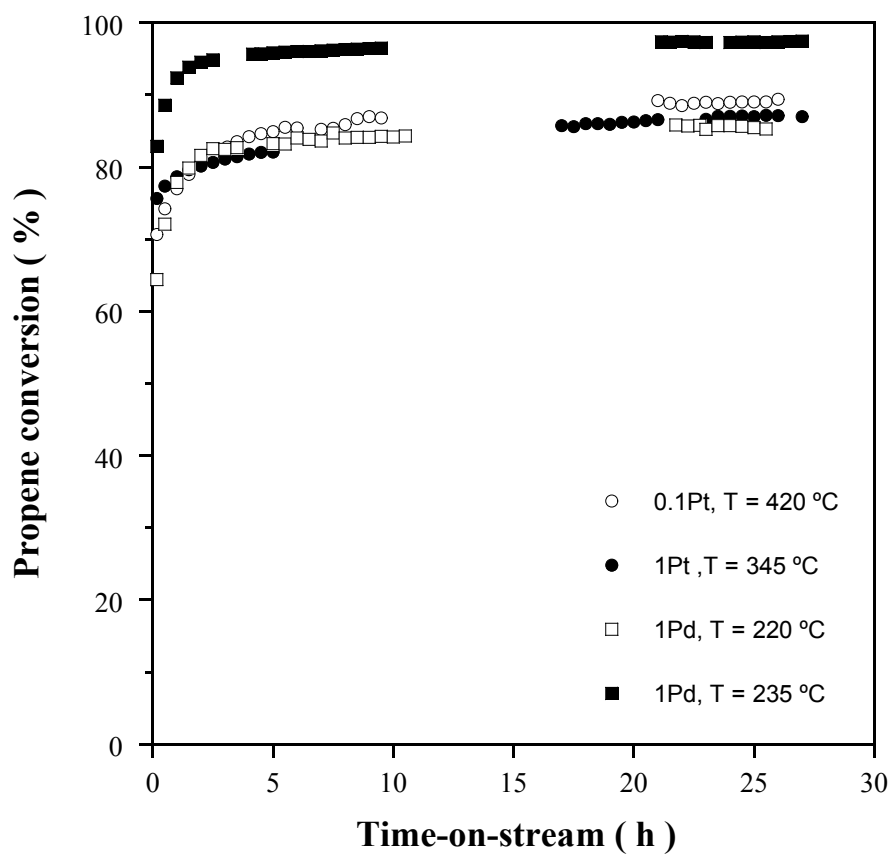


Figure S4. Evolution of the conversion of propene at various temperatures with time-on-stream.