

Supplementary Materials: Study of CeO₂ Modified AlNi Mixed Pillared Clays Supported Palladium Catalysts for Benzene Adsorption/Desorption-Catalytic Combustion

Table S1. Main data of reported literatures on catalytic combustion of benzene over supported noble metal catalysts.

Catalysts	Reaction conditions			T_{100} (°C)
	Active sites (wt.%)	GHSV (h ⁻¹)	Benzene	
Pd-Ni/SBA-15	0.16%Pd	120,000	1000 ppm	260
Pd/La/ZSM-5	0.2%Pd-6%La	20,000	1000 ppm	290
Pd/ γ -Al ₂ O ₃	0.4%Pd	30,000	1000 ppm	370
Pt/C	3% Pt	8,000	1000 ppm	300
Pd-Co ₃ /AlO	1.0%Pd	30,000	1000 ppm	330
<u>Pd/Ce/AlNi-PILC [our work]</u>	<u>0.2% Pd-12.5% Ce</u>	<u>20,000</u>	<u>1000 ppm</u>	<u>240</u>

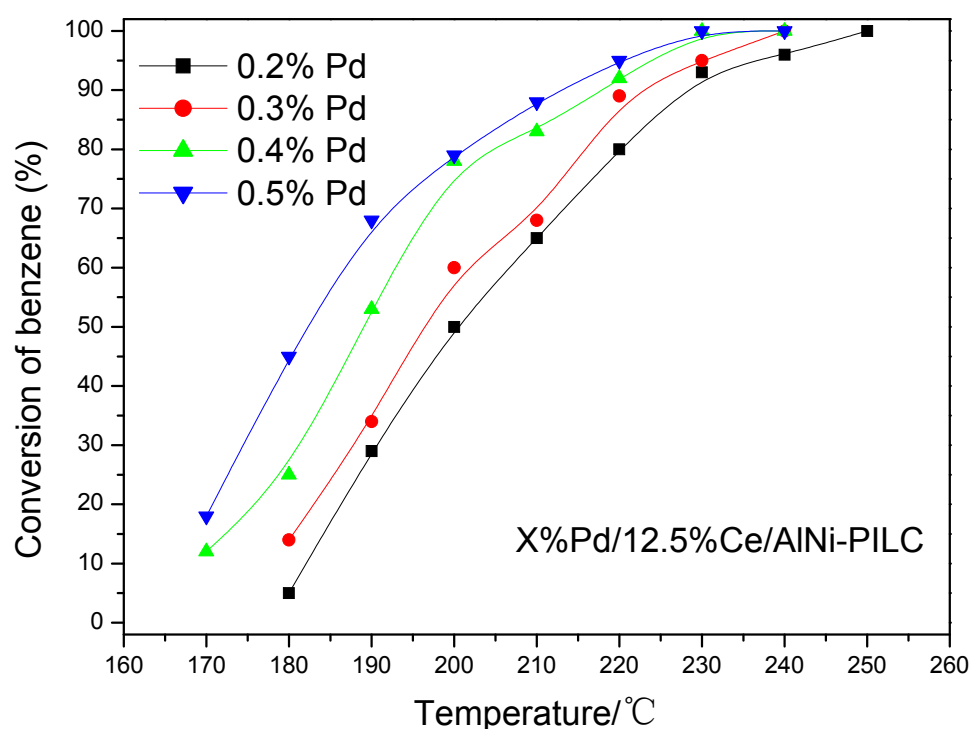


Figure S1. Effects of Pd content on catalytic activity of Pd/12.5% Ce/AlNi-PILC for benzene combustion. Benzene concentration: 1000 ppm; GHSV: 20,000 h⁻¹; Catalyst amount: 350 mg.

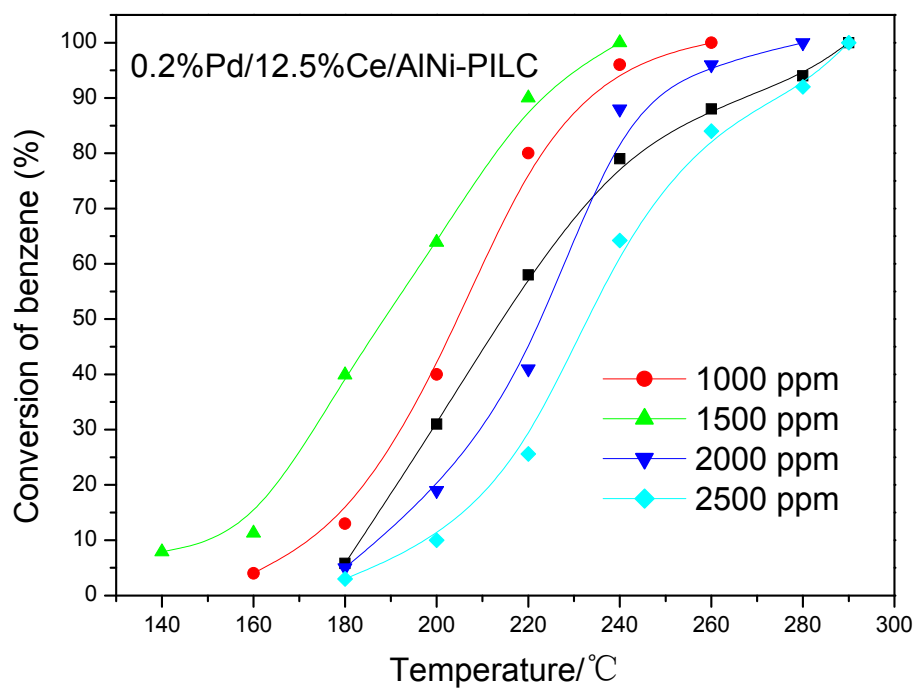


Figure S2. Effects of inlet concentration on benzene catalytic combustion over Pd/12.5% Ce/AlNi-PILC. Benzene concentration: 500-2500 ppm; GHSV: 20,000 h⁻¹; Catalyst amount: 350 mg.

Table S2. Metal loadings (wt.%) of different catalysts

Catalysts	Pd [wt.%]	Ce [wt.%]
Pd/MMT	0.186	--
Pd/AlNi-PILC	0.192	--
Pd/12.5% Ce/AlNi-PILC (fresh)	0.187	12.0
Pd/12.5% Ce/AlNi-PILC (used) ^a	0.185	12.3

^a The reused catalyst after reaction for 3 times.