

The characterization of Ru catalysts.

Ru metal loadings were determined by ICP and the dispersions were determined by CO chemisorption. From the Ru dispersion data, it can be seen that Ru dispersion was not the only factor that impacts the reactivity.

Table S1 Characteristics of the Ru catalysts.

Entry	Catalyst	Ru/wt% ^a	Ru Dispersion/% ^b
1	Ru/HZSM-5	1.33	17.4
2	Ru/ZSM-5	1.30	10.0
3	Ru/SiO ₂ -Al ₂ O ₃	1.54	85.7
4	Ru/SiO ₂	1.45	25.4
5	Ru/ZrO ₂	1.47	61.3
6	Ru/Mg(OH) ₂	1.59	49.9
7	Ru/La(OH) ₃	1.56	32.4
8	Ru/La ₂ O ₃	1.25	12.5

^a Determined by ICP.

^b Determined by chemisorption of carbon monoxide.

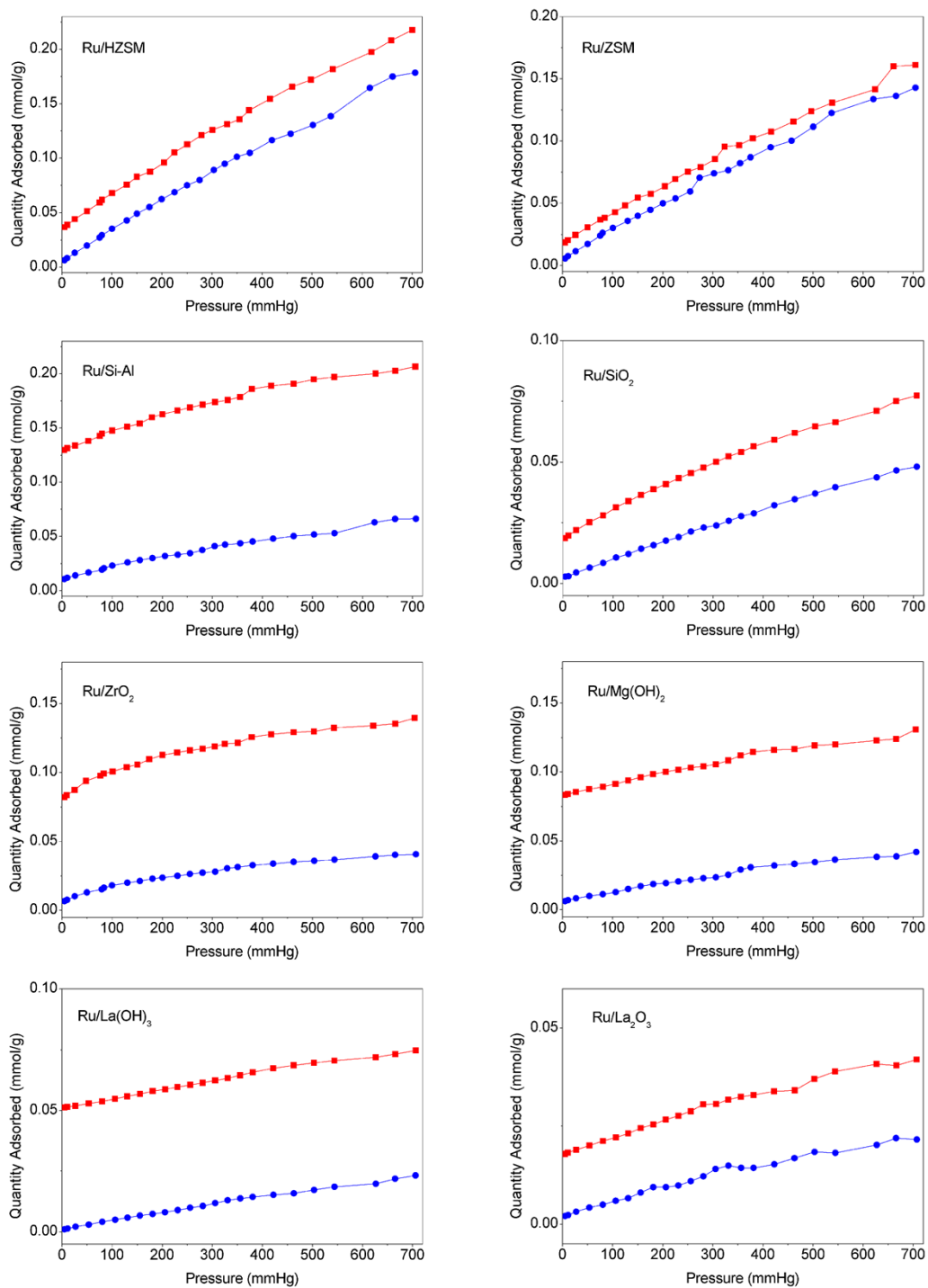


Fig. S1 CO chemisorption of Ru catalysts. Red line: first analysis data point. Blue line: Repeat analysis data point.

Table S2 The characteristics of the selected supports.

Entry	Code	BET (m ² /g)	PORE VOLUME (cm ³ /g)	PORE SIZE (nm)	C/%	
					Untreated	Treated ^a
1	ZrO ₂	247.1	0.24	3.8	0.32	8.26
2	Mg(OH) ₂	66.7	0.55	18.9	0.24	9.83
3	La(OH) ₃	26.8	0.12	11.3	0.71	6.19
4	La ₂ O ₃	17.3	0.11	12.9	0.51	2.71

^a Treated by stearic acid at room temperature.

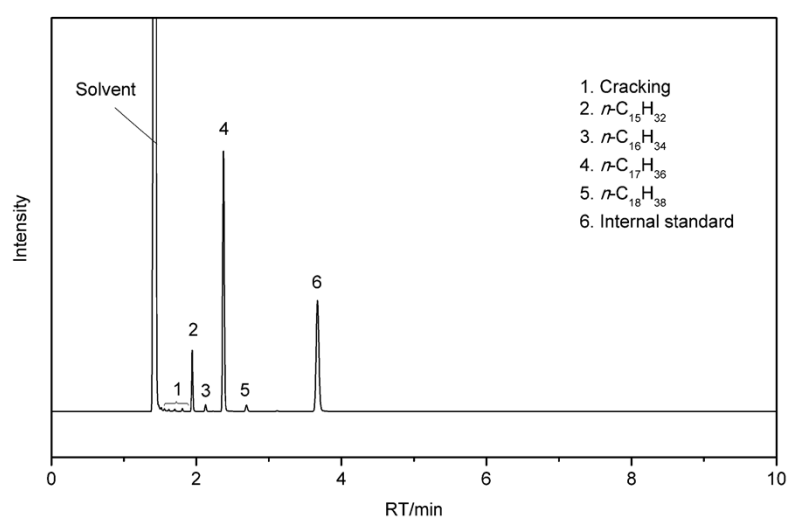


Fig. S2 The GC chart of the liquid hydrocarbons formed from the hydrotreatment of Jatropha oil over Ru/La(OH)₃ catalyst at 200 °C for 8 h.

The comparison of fresh and used catalysts.

There was no significant difference in the XRD patterns of Ru/La(OH)₃ catalysts. It can be seen that the supporter exhibited La(OH)₃ phase (JCPDS card NO. 36-1481) and the diffraction peaks of Ru were not observed.

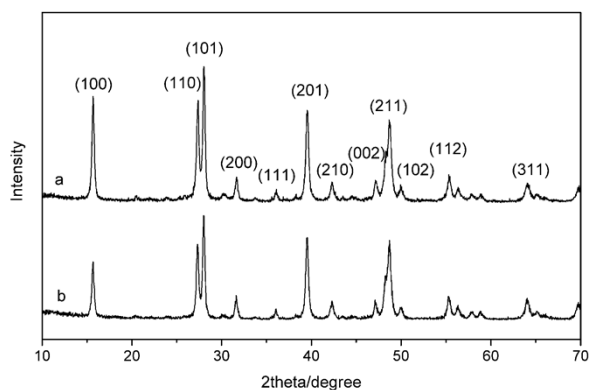


Fig. S3 XRD patterns of Ru/La(OH)₃ catalyst: (a) before reaction and (b) after four reaction cycles.

Ru 3p core level spectra for fresh and used Ru/La(OH)₃ catalysts were also analyzed. More Ru⁰ is obtained after hydrotreating reaction.

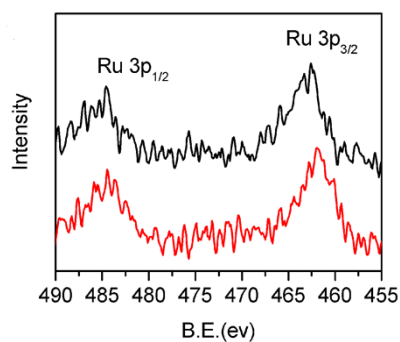


Fig. S4. The Ru 3p core level spectra for Ru/La(OH)₃ catalyst: (a) before reaction and (b) after four reaction cycles.