Supporting Information

Porous $LaFeO_3$ prepared by an in-situ carbon templating method for catalytic transfer hydrogenation reactions

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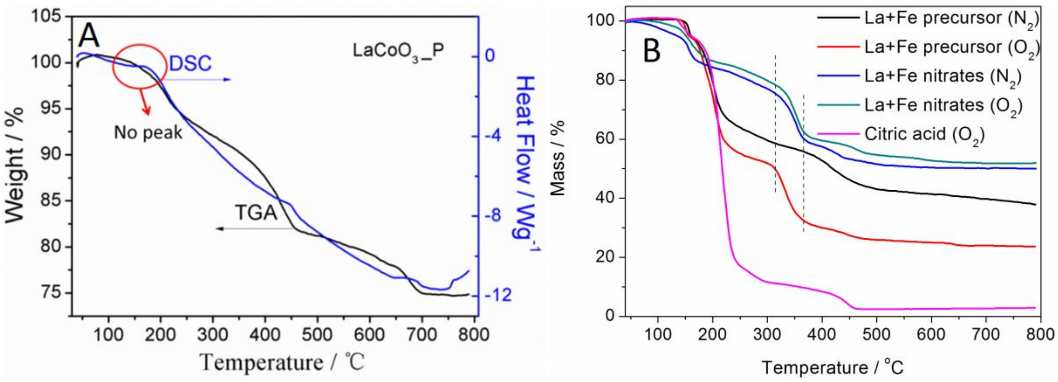
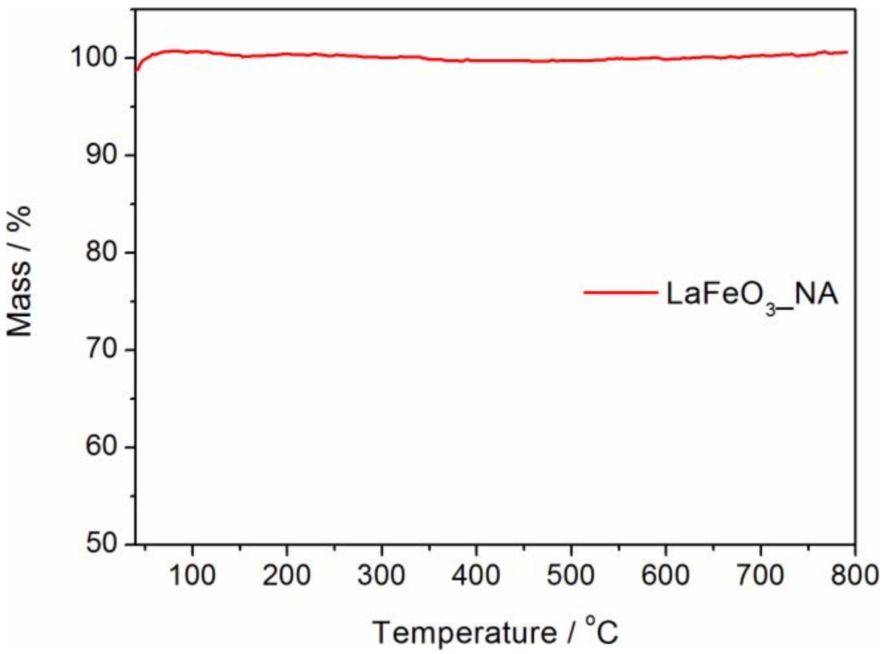


Figure S1. (A) TGA-DSC profiles from $LaFeO_3$ prepared by a co-precipitation method; (B) TGA profiles from La+Fe precursor, La+Fe nitrates, and citric acid conducted in O_2 or N_2 atmospheres



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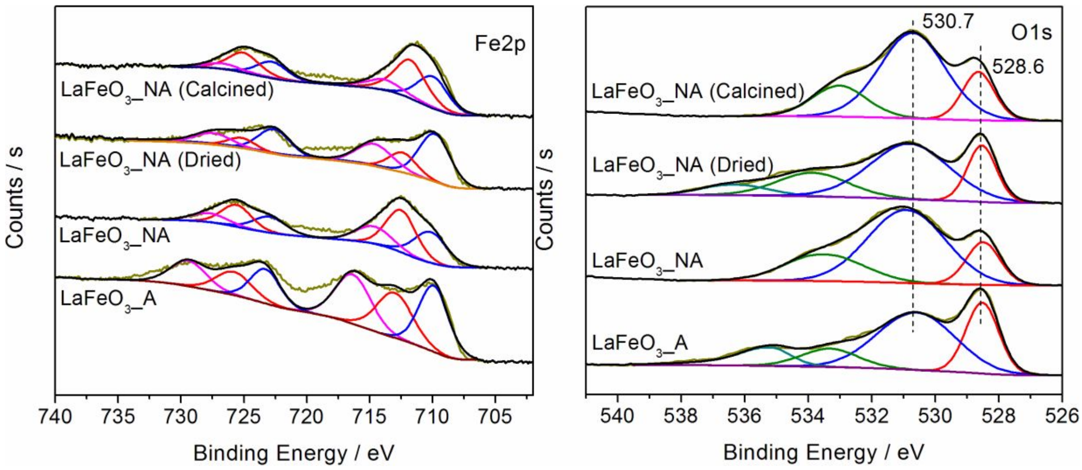


Figure S3. Deconvoluted Fe 2p and O 1s XPS spectra from $LaFeO_3$_A, and from fresh, dried, and calcined $LaFeO_3$_NA

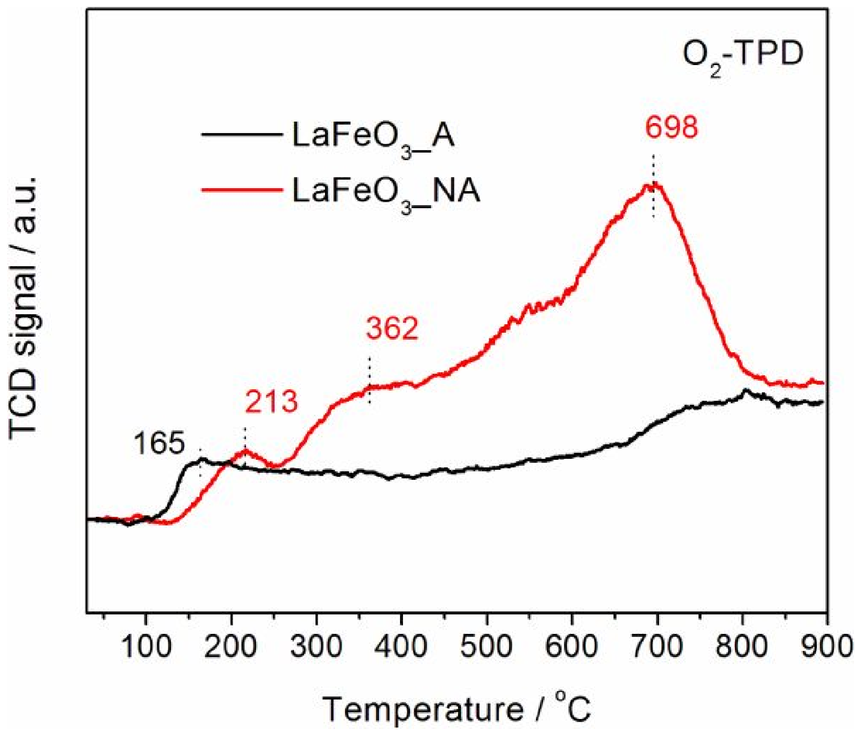


Figure S4. O_2-TPD profiles from $LaFeO_3$_NA and $LaFeO_3$_A

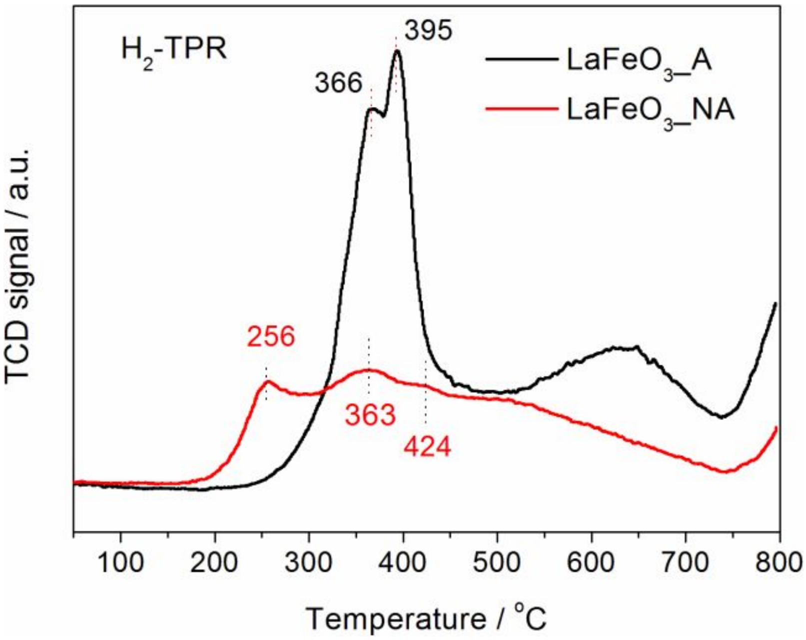


Figure S5. H_2-TPR profiles from $LaFeO_3$_NA and $LaFeO_3$_A

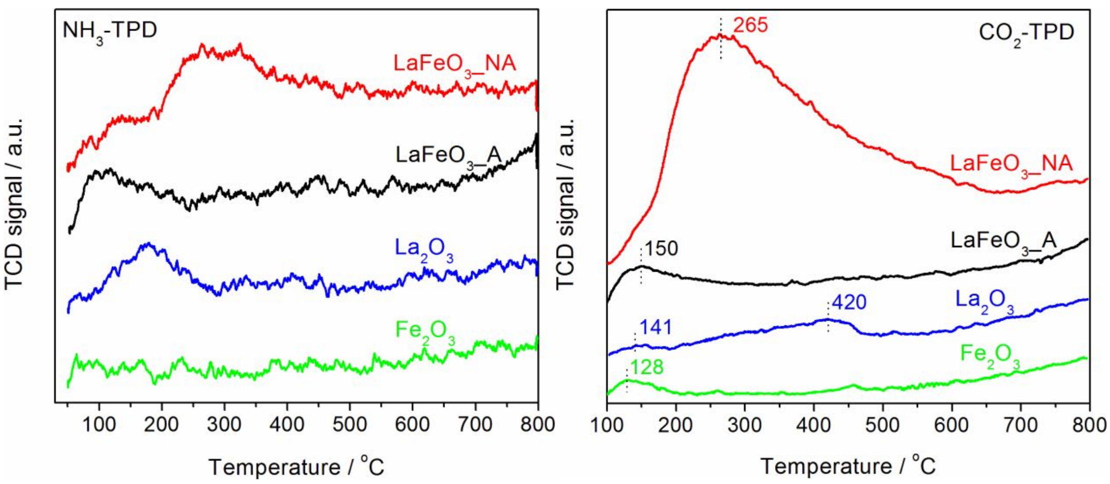


Figure S6. NH_3-TPD (left) and CO_2-TPD (right) profiles from $LaFeO_3$_NA, $LaFeO_3$_A, La_2O_3 and Fe_2O_3

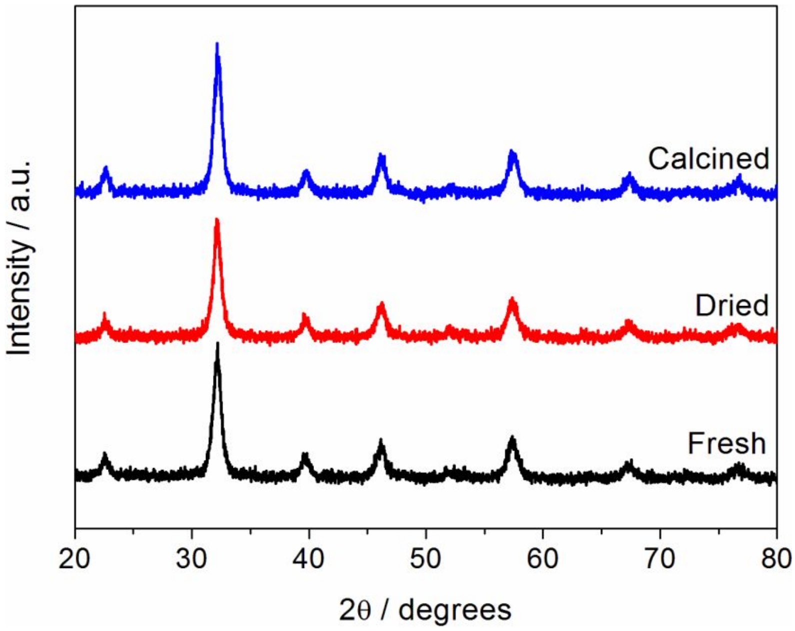


Figure S7. XRD patterns from the fresh, dried, and calcined $LaFeO_3$_NA

Table S1. The reaction conditions of varied catalysts for CTH of furfural.

Entry	Catalyst	Catalyst / mg	Furfural / mg	Mass ratio[a]	Solvent	Volume / mL	Pressure	Temp. / °C	Time / h	Product[b]	Ref.
1	5 wt.% Ru/C	100	188	1.88	2-propanol	24	2.04 MPa (N_2)	180	5	MF	[1]
2	Ru/RuO_2/C	100	188	1.88	2-propanol	24	2.04 MPa (N_2)	180	5	MF	[2]
3	2 wt% Pd/Fe_2O_3	500	1500	3.00	2-propanol	40	1.5 MPa (N_2)	180	7.5	FOL	[3]
4	Cu_xAl	90	115	1.28	methanol	15	1 MPa (N_2)	240	1.5	FOL	[4]
5	Cu/AC−SO_3H	96	96	1.00	2-propanol	5	0.4 MPa (H_2)	110	2	FOL	[5]
6	Cu/AC−SO_3H	96	96	1.00	2-propanol	5	4 MPa (N_2)	150	5	FOL	[5]
7	Ni-Cu/Al_2O_3	1000	4487	4.49	2-propanol	-	4.5 MPa (N_2)	200	4	FOL	[6]
8	γ-Fe_2O_3@HAP	40	96	2.40	2-propanol	15	1 MPa (N_2)	180	3	FOL	[7]
9	La_2O_3	49	106	2.16	2-propanol	3	0.8 MPa (N_2)	180	17	FOL	[8]
10	$LaFeO_3$_NA	50	40 (98)	0.80 (1.96)	2-propanol	15	1 MPa (N_2)	180	3	FOL	this work

[a] Mass ratio of furfural to catalyst.

[b] 2-methylfuran (MF) and furfuryl alcohol (FOL).

Table S2. Activity of $LaFeO_3$_NA for the CTH of furfural to FOL under varied conditions^a

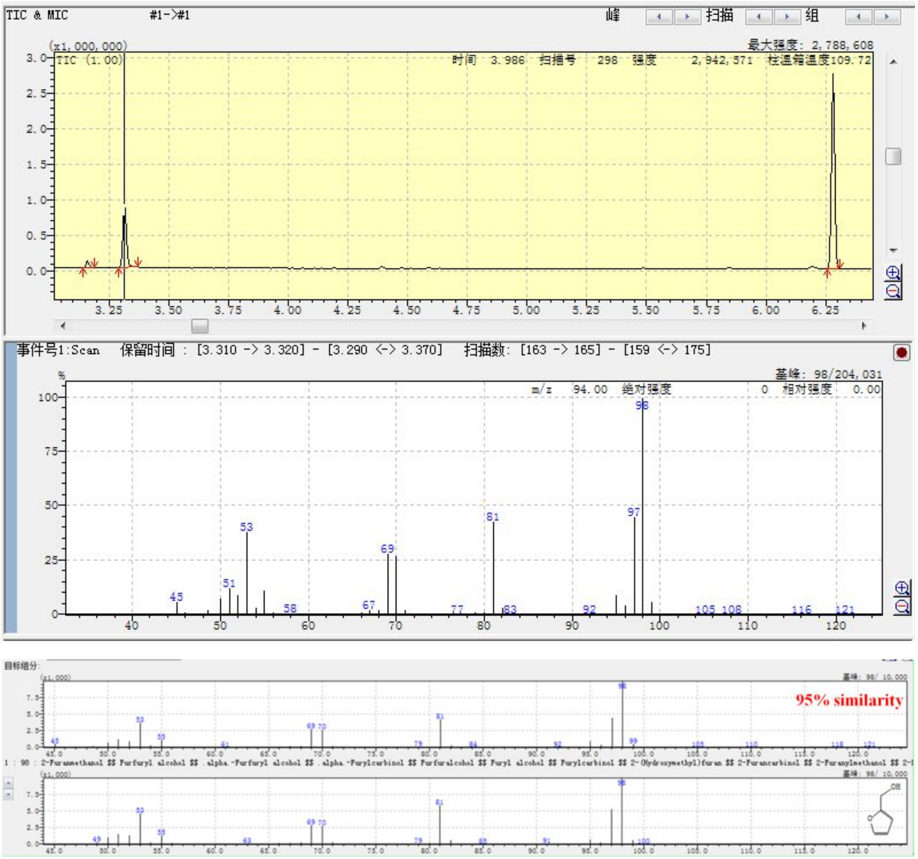
Entry	Catalyst content /mg	Furfural content / mg	Reaction time / h	Conversion / %	FOL Selectivity / %
1	50	40	3	90	94
2	50	98	3	53	85
3	50	98	5	62	89
4	250	490	5	59	87
5	250	595	7	53	84
6	250	765	7	49	82
7	500	1530	7	50	86

[a] Reaction conditions: iso-propanol as hydrogen donor (15 mL for Entry 1-6, 60 mL for Entry 7), dodecane as internal standard, and the reaction was carried out at 180 °C and 1 MPa N_2.

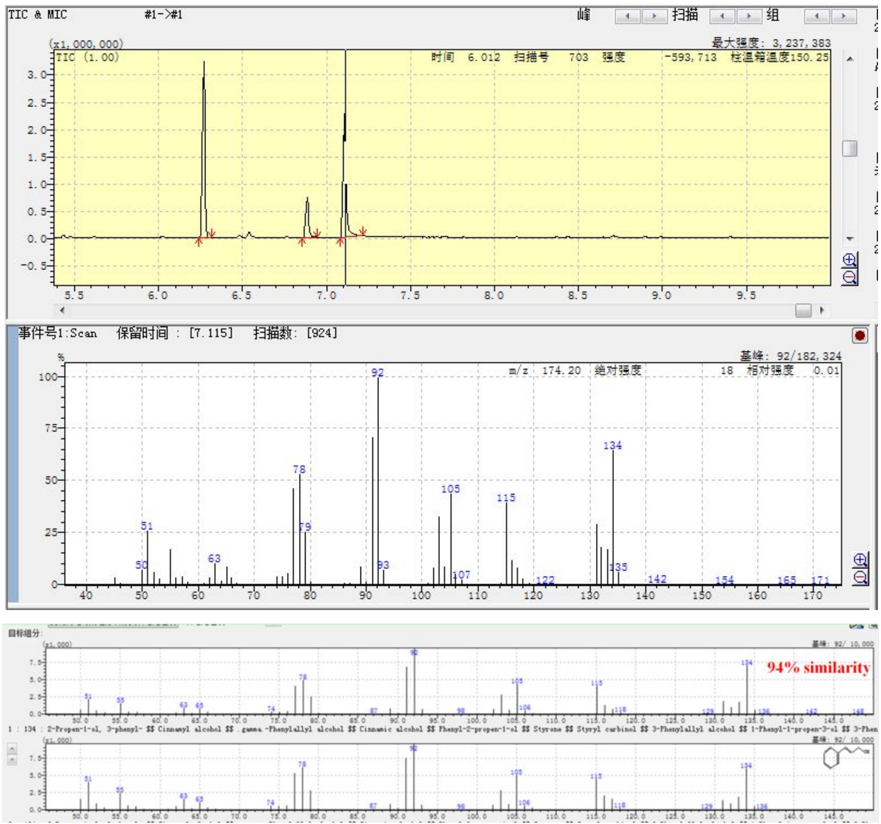
Table S3. Calculated energies for Fe_4LaO_5 and reagents

	Energy / hartree
Fe_4LaO_5	-749.260
C_4H_3OCHO	-343.346
$CH_3CHOHCH_3$	-194.351
RC	-1287.096
PC	-1287.105
RC formation energy / kcal mol^{-1}	-87.1
(PC-RC) / kcal mol^{-1}	-5.7

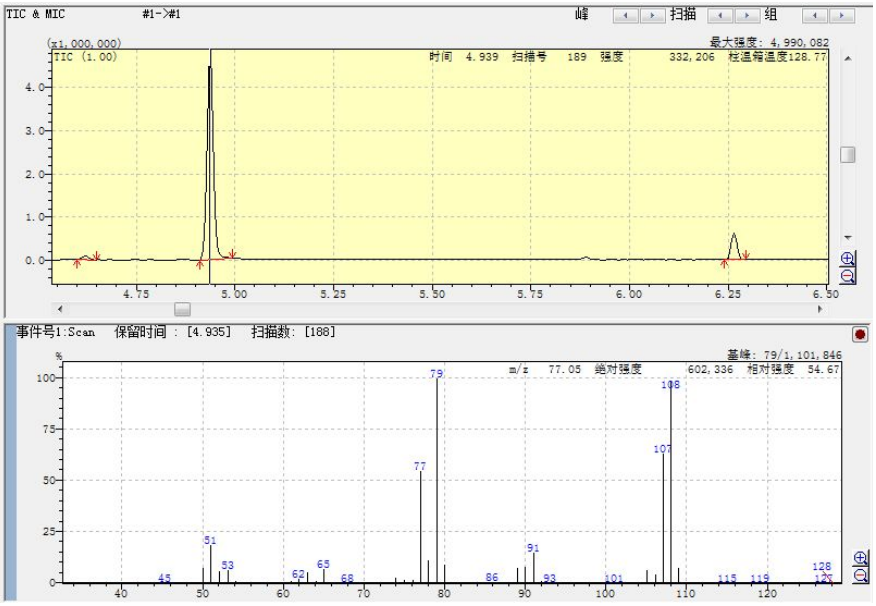
Entry 1 Furfuryl alcohol

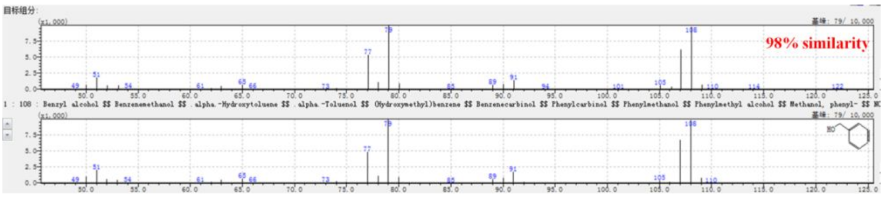


Entry 2 Cinnamyl alcohol

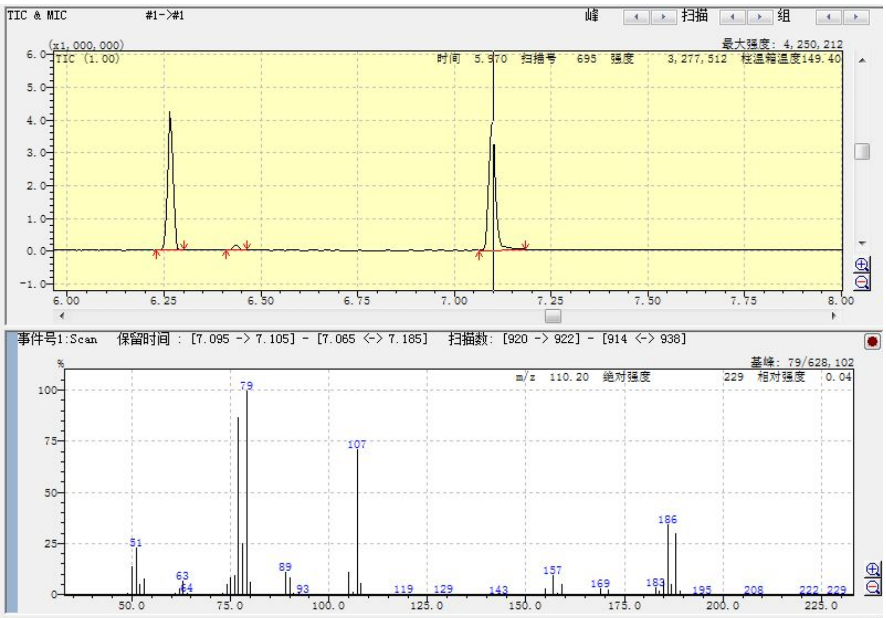


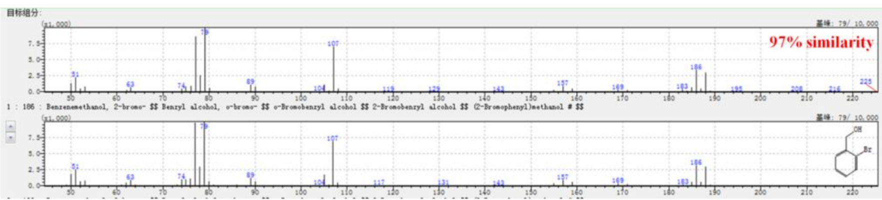
Entry 3 Benzyl alcohol



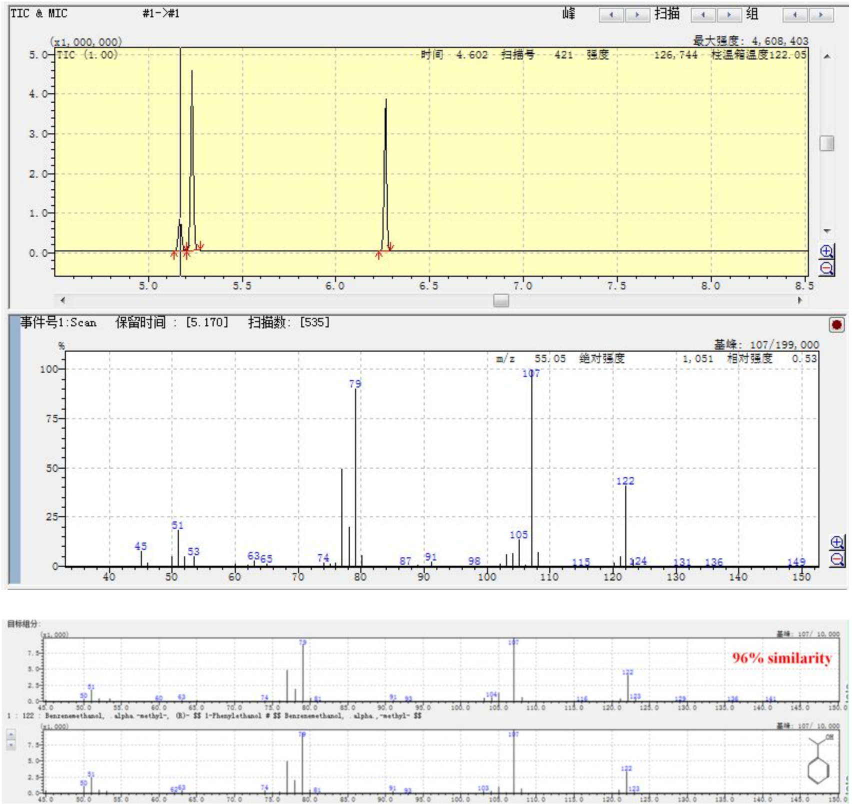


Entry 4 Benzenemethanol, 2-bromo-





Entry 5. Styralyl alcohol



Entry 6. Cyclohexanol

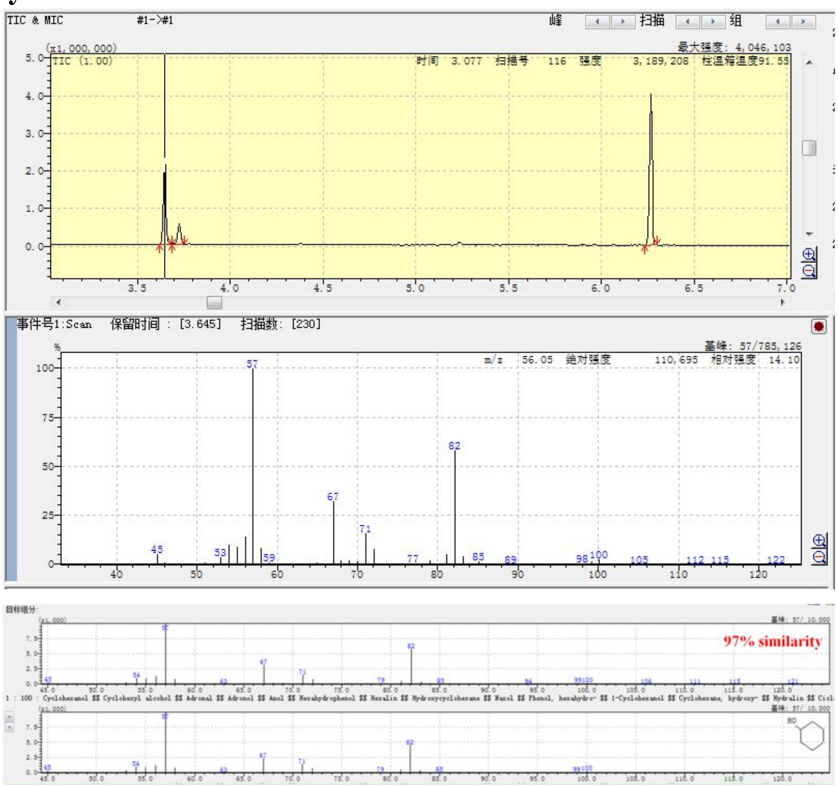


Figure S8. Mass spectra of products from CTH of various carbonyl compounds over $LaFeO_3$_NA

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