catalysts

MDPI

Supplementary Materials

Transition Metal B-Site Substitutions in $LaAlO_3$ Perovskites Reorient Bio-Ethanol Conversion Reactions

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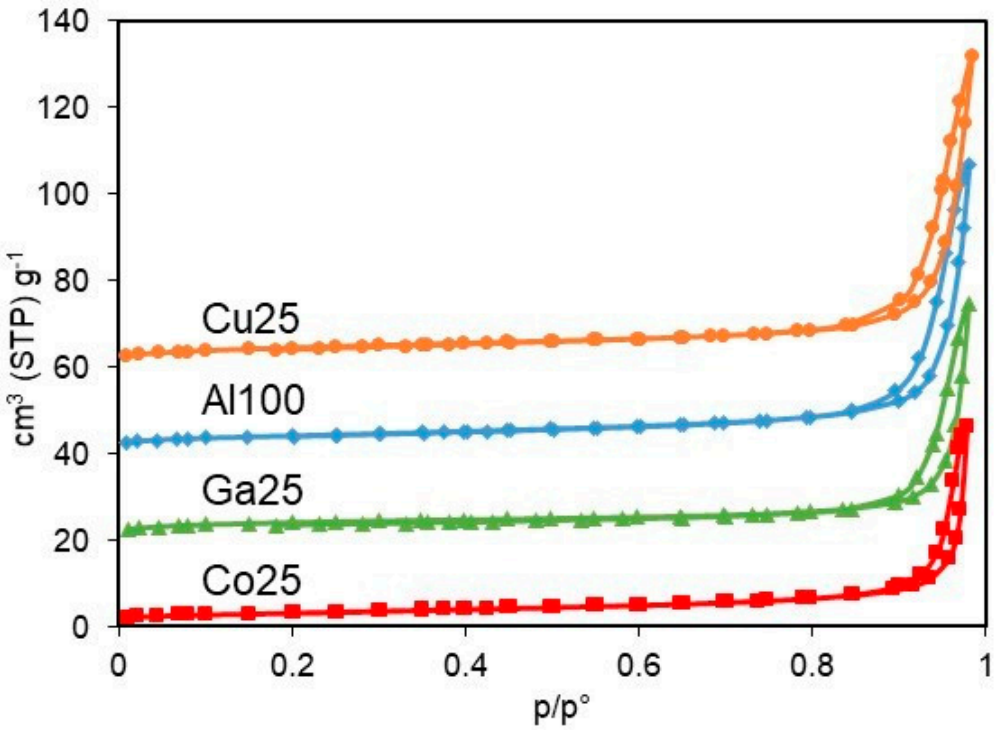

Figure S1. N_2 sorption isotherms of the catalysts. For sake of clarity, the curves are shifted by 20 $cm^3\ g^{-1}$.

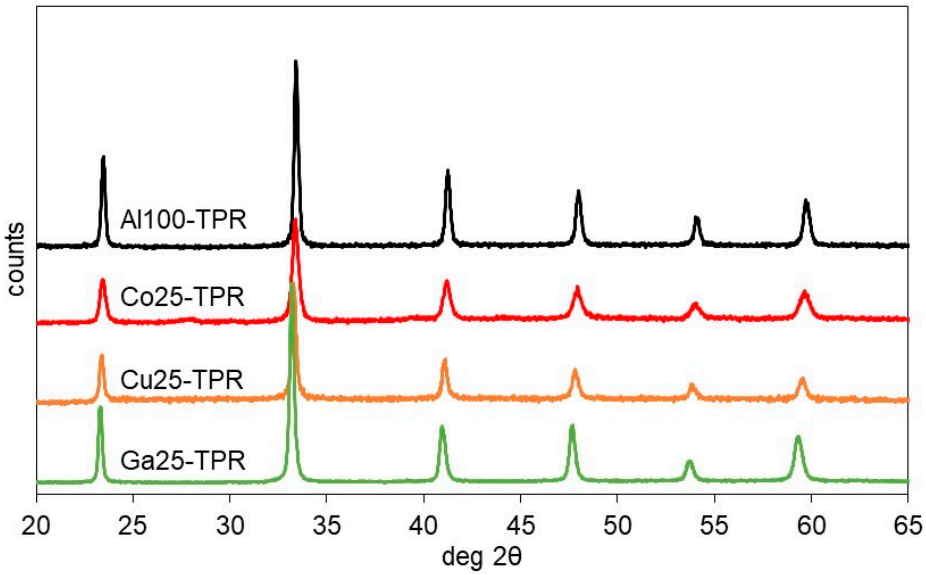

Figure S2. XRD patterns of catalysts after H_2-TPR. For sake of clarity, the patterns are shifted along the y axis.

Table S1. Products formed by ethanol conversion at 350 °C, ~ 36 and 60 % conversion

Catalyst	**Al100**		**Cu25**		**Co25**		**Ga25**	
WHSV / h^{-1}	0.020	0.011	0.011	0.011	0.035	0.017	0.057	0.023
t.o.s. / h	3.0	1.0	3.0	1.0	3.0	3.0	3.0	2.5
conversion %	36.2	57.5	35.9	57.3	37.3	62.2	36.7	61.52
carbon balance %	93.6	77.4	95.9	76.0	95.8	86.6	95.6	90.90
				selectivity %				
methane	0.33	0.51	0.61	0.06	0.48	0.60	0.25	0.24
ethylene	35.43	29.76	9.74	4.36	11.88	9.61	5.51	4.08
diethylether	1.11	0.79	0.59	0.44	0.45	0.58	0.63	0.47
ethane	0.31	0.33	0.38	0.23	0.09	0.10	0.17	0.09
acetaldehyde	22.36	7.39	20.38	9.67	18.05	6.42	46.57	44.40
acetone	2.34	3.91	13.45	16.96	27.89	31.83	3.58	5.07
Isopropanol	0.34	0.38	0.58	0.67	1.06	1.30	0.31	0.41
propene	0.41	0.45	0.55	0.63	1.00	1.05	0.41	0.51
crotonaldehyde	0.30	n.d.	n.d.	n.d.	0.20	0.07	0.40	0.19
butyraldehyde	0.86	0.38	1.07	0.35	0.95	0.32	1.93	3.01
butanone	0.48	0.25	0.16	0.27	0.18	0.15	0.45	0.37
butanol	0.44	0.62	0.20	0.10	0.21	0.10	0.51	0.30
butene	0.16	0.23	0.18	0.07	0.26	0.24	0.02	0.21
butadiene	3.19	2.57	0.80	0.76	0.27	0.33	3.48	5.00
pentanone	4.14	4.76	20.89	12.95	12.78	14.67	5.43	7.17
pentene	0.48	0.38	0.25	0.17	0.19	0.18	0.25	0.33
pentadiene	0.94	0.79	0.70	0.74	0.67	0.49	0.46	0.49
hexene	0.26	0.17	0.19	0.07	0.51	0.10	0.70	0.06
hexadiene	2.00	0.93	0.83	0.32	0.78	0.51	4.35	3.72