Supplementary Information

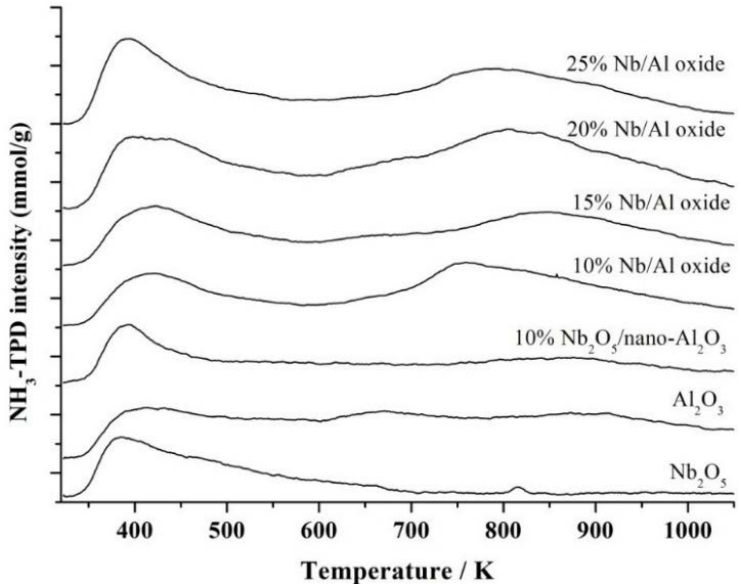

Figure S1. NH_3-TPD curves of Al_2O_3, 10% Nb_2O_5/nano-Al_2O_3, Nb_2O_5, and a series of Nb/Al oxide catalysts.

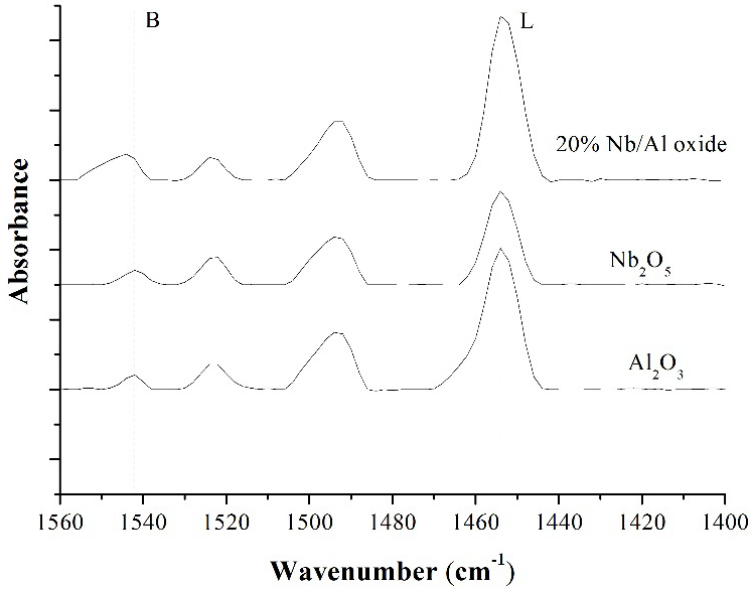

Figure S2.FTIR spectra of pyridine adsorption of Al_2O_3, Nb_2O_5, and 20% Nb/Al oxide.

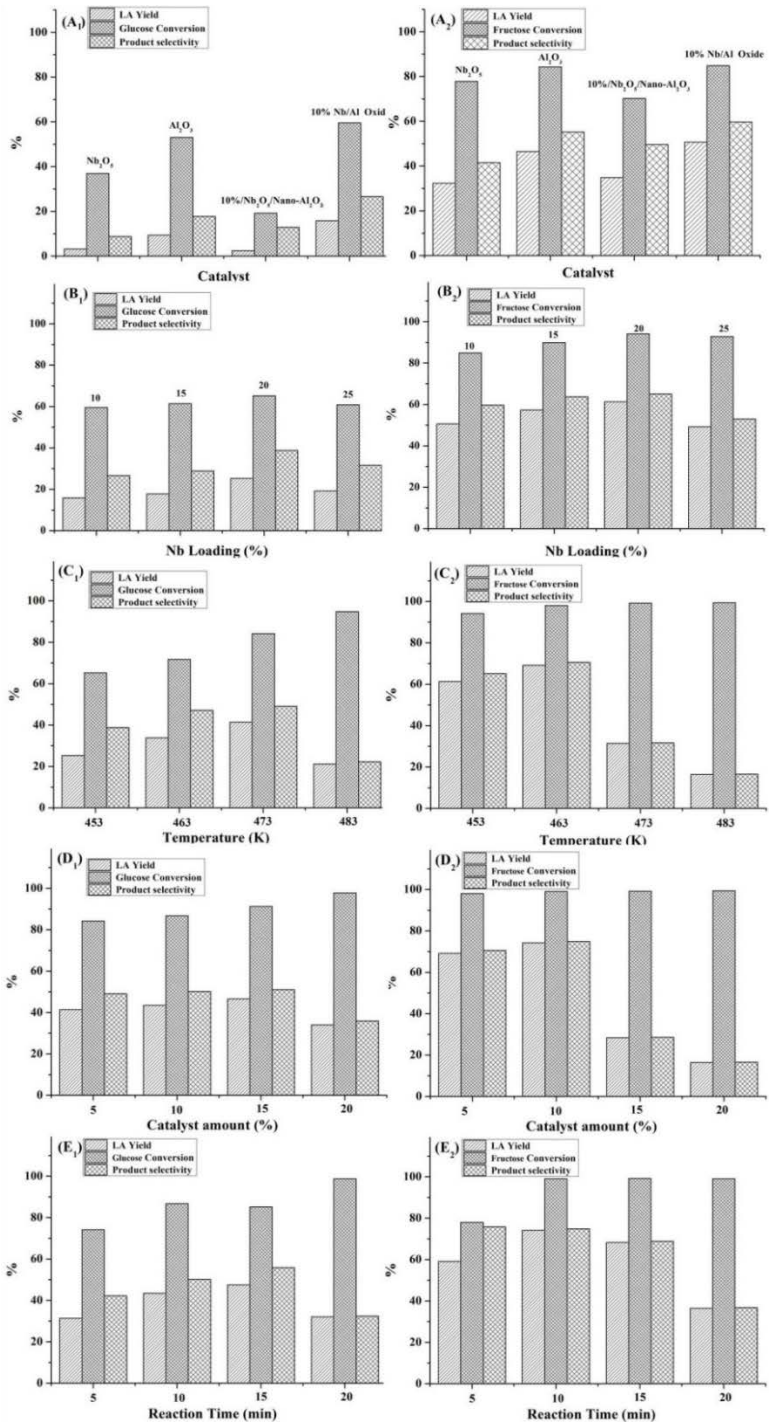

Figure S3. (**A_1** and **A_2**) Catalytic conversion of glucose and fructose to LA with different metal oxide catalysts (2.0 g sugar, 30 mL H_2O, 5 wt% catalyst, 453 K, 10 min); (**B_1** and **B_2**) Catalytic conversion of glucose and fructose to LA over Nb/Al oxides with different Nb loadings (2.0 g sugar, 30 mL H_2O, 5 wt% catalyst, 453 K, 10 min); (**C_1** and **C_2**) Effect of reaction temperature on catalytic conversion of glucose and fructose to LA over 20% Nb/Al oxide (2.0 g sugar, 30 mL H_2O, 5 wt. % catalyst, 10 min); (**D**) Effect of 20% Nb/Al oxide dosage on catalytic conversion of glucose and fructose to LA (2.0 g sugar, 30 mL H_2O, 473 K (**D_1**) and 463K (**D_2**), 10 min); (**E**) Effect of reaction time on catalytic conversion of glucose and fructose to LA over 20%Nb/Al oxide (2.0 g sugar, 30 mL H_2O, 473K (**E_1**) and 463 K (**E_2**)).

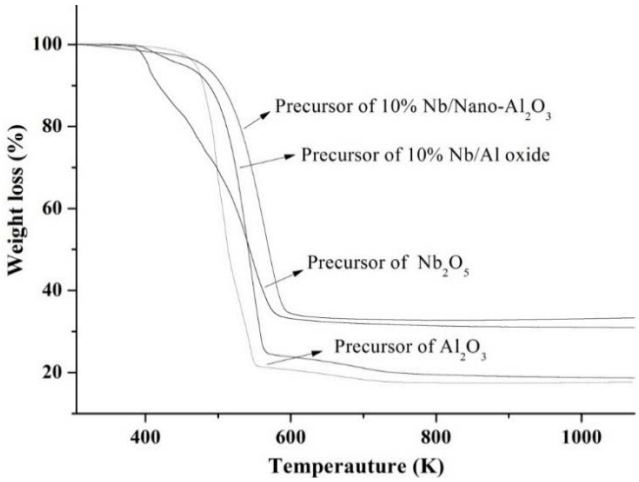

Figure S4. Thermogravimetric analysis of 10%Nb/Nano-Al_2O_3, 10%Nb/Al, Al_2O_3, and Nb_2O_5 precursors.

Table S1. Distributing of Brønsted andLewis acid concentrations (mmol/g) of catalyst sampls.

Concentration / Samples	Brønsted (mol/g)	Lewis (mol/g)	Ration of Brønsted to Lewis
20% Nb/Al	0.0071	0.0293	0.24
10% Nb/Al	0.0051	0.0243	0.21
Nb_2O_5	0.0030	0.0180	0.17
Al_2O_3	0.0022	0.0234	0.09