Electronic supplementary information

Conversion of cellulose into lactic acid using zirconium oxide catalysts

Panya Wattanapaphawong,[a,b] Prasert Reubroycharoen[b,c] and Aritomo Yamaguchi*[a,d]

[a] *National Institute of Advanced Industrial Science and Technology (AIST), 4-2-1 Nigatake, Miyagino, Sendai 983-8551, Japan*

[b] *Department of Chemical Technology, Faculty of Science, Chulalongkorn University, Pathumwan, Bangkok 10330, Thailand*

[c] *Center of Excellence on Petrochemical and Materials Technology, Chulalongkorn University Research Building, Bangkok 10330, Thailand*

[d] *JST, PRESTO, 4-2-1 Nigatake, Miyagino, Sendai 983-8551, Japan*

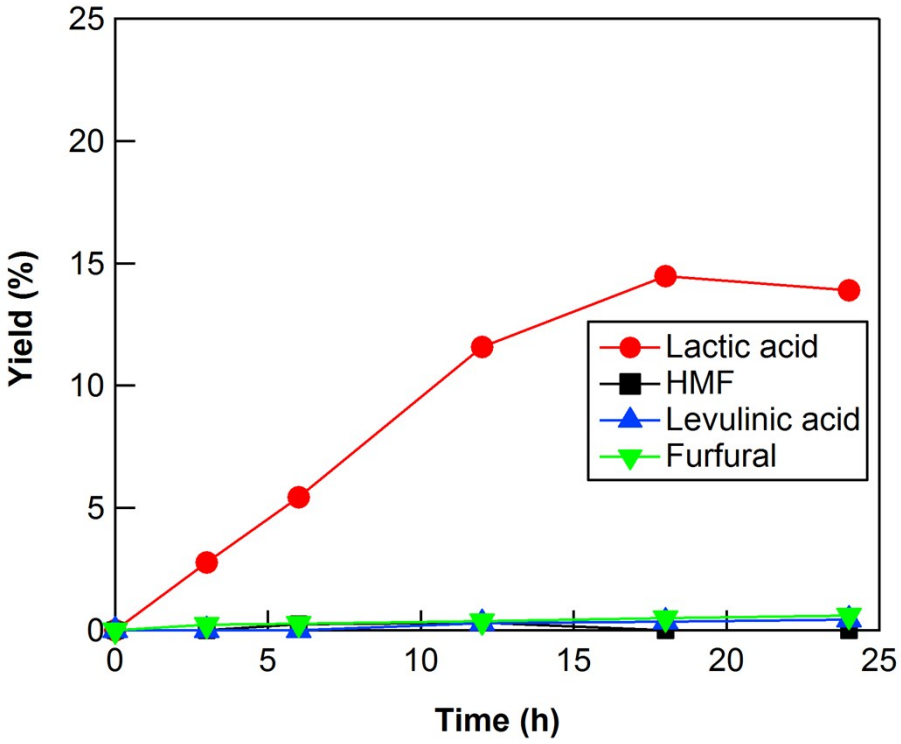

Fig. S1 Cellulose conversion using a ZrO_2 catalyst at 453 K as a function of reaction time.

Reaction conditions: 0.5 g ball-milled cellulose, 1 g ZrO_2 (ZRO-7), 50 g water.

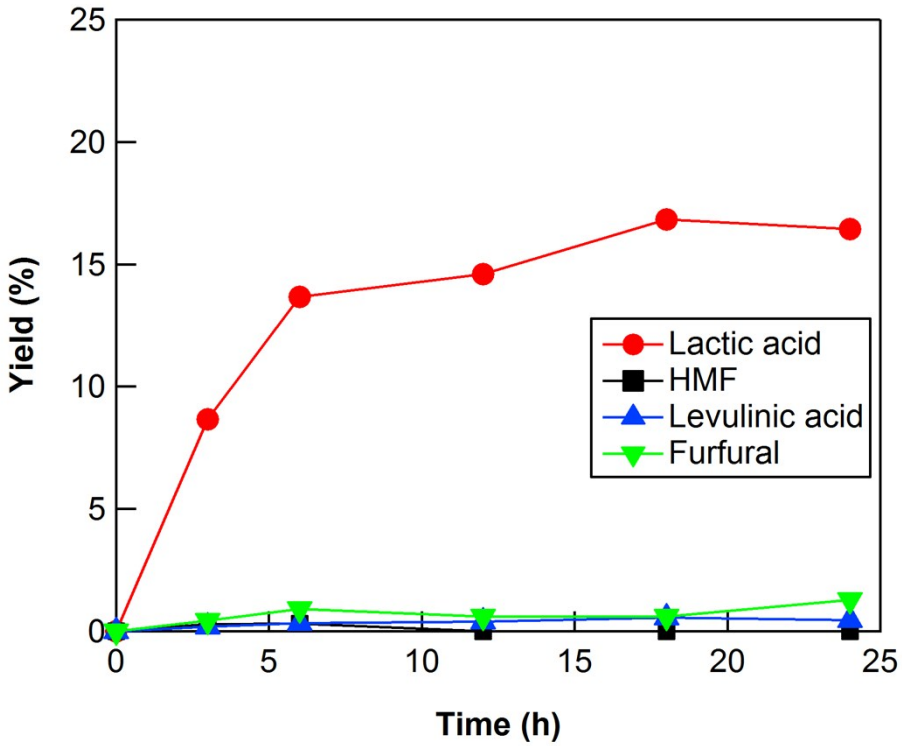

Fig. S2 Cellulose conversion using a ZrO_2 catalyst at 463 K as a function of reaction time.

Reaction conditions: 0.5 g ball-milled cellulose, 1 g ZrO_2 (ZRO-7), 50 g water.

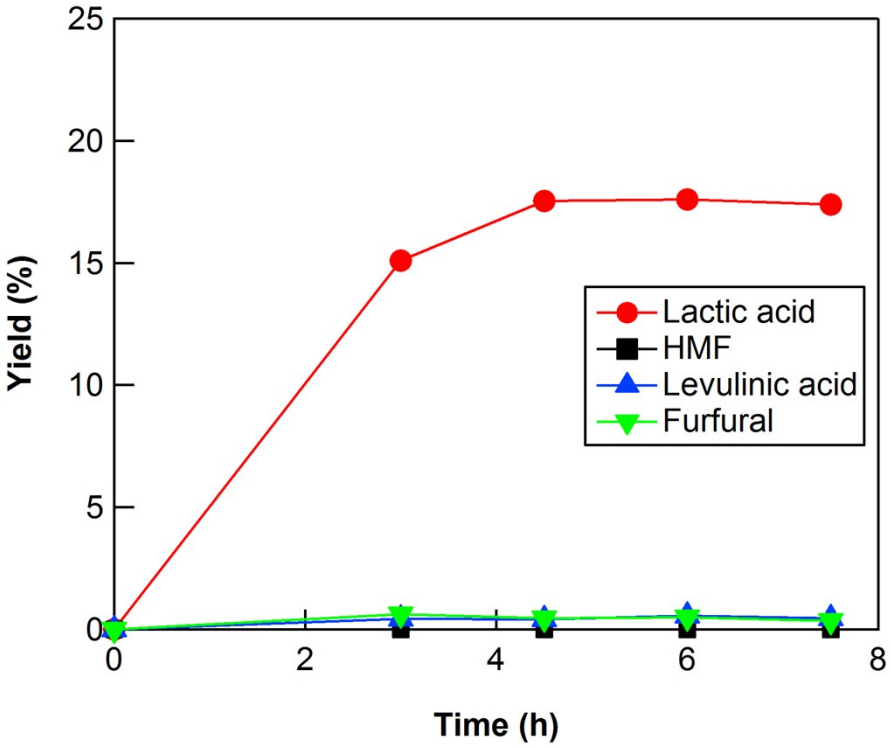

Fig. S3 Cellulose conversion using a ZrO_2 catalyst at 483 K as a function of reaction time.

Reaction conditions: 0.5 g ball-milled cellulose, 1 g ZrO_2 (ZRO-7), 50 g water.

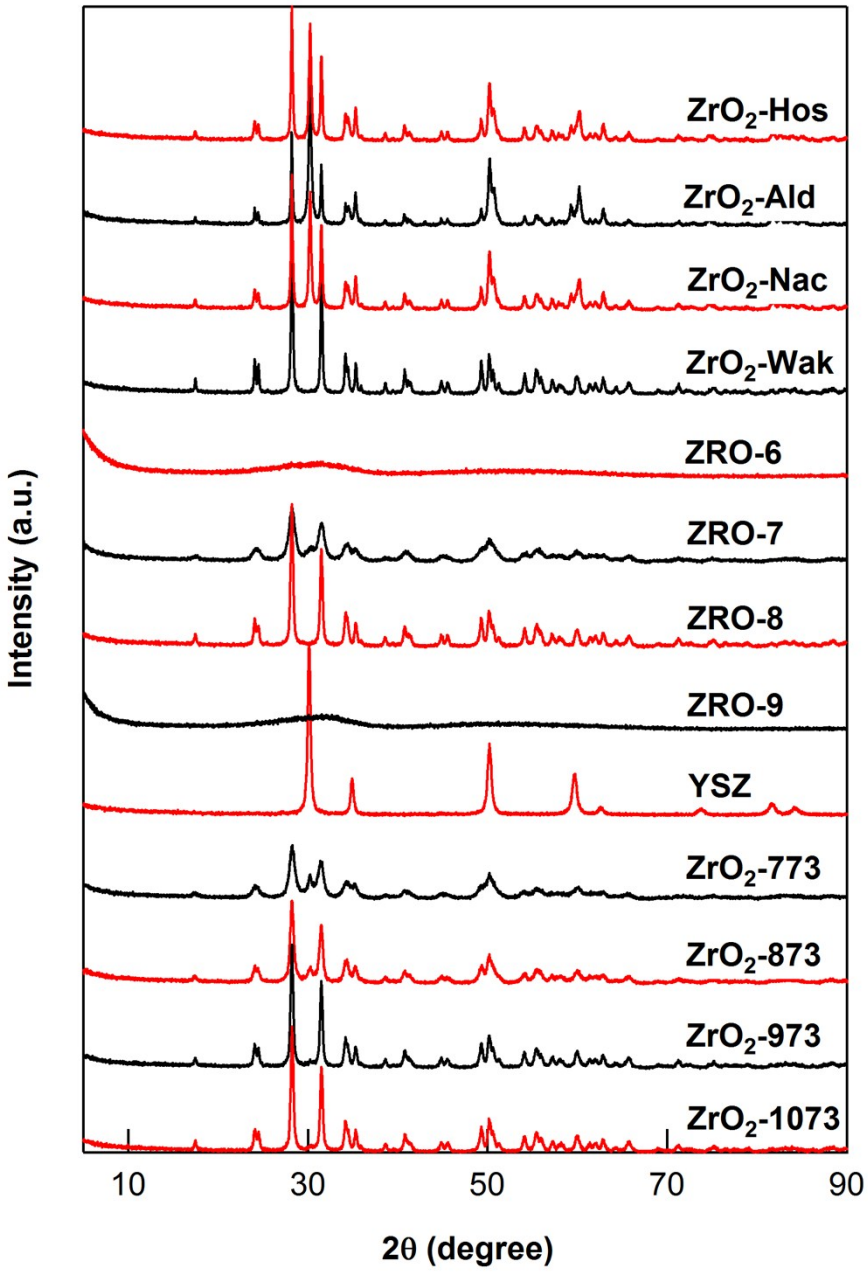

Fig. S4 XRD patterns of ZrO_2 samples.

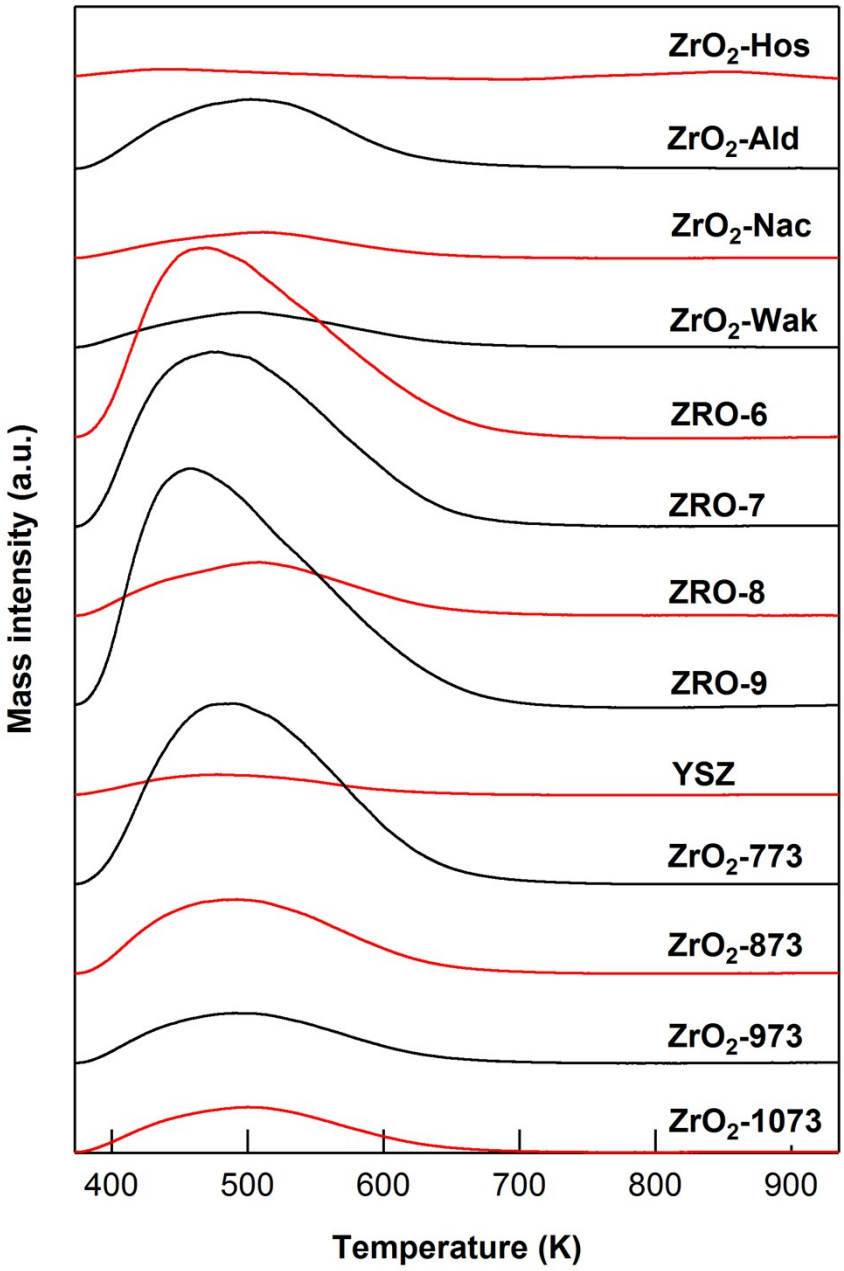

Fig. S5 Profiles of temperature-programmed desorption of NH_3 on ZrO_2 samples.

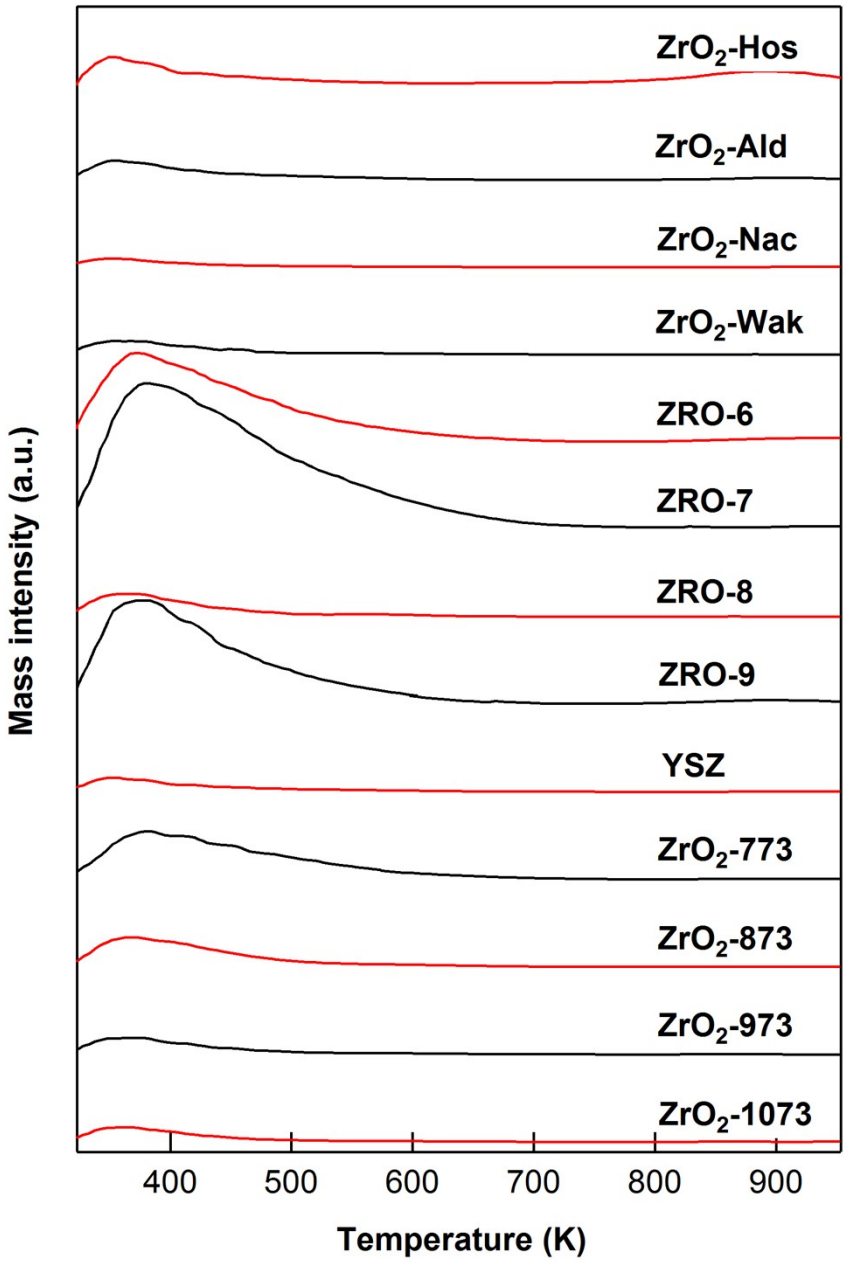

Fig. S6 Profiles of temperature-programmed desorption of CO_2 on ZrO_2 samples.