Supporting Information

Tannin-Derived Zirconium-Containing Porous Hybrid for Efficient Meerwein-Ponndorf-Verley Reduction under Mild Conditions

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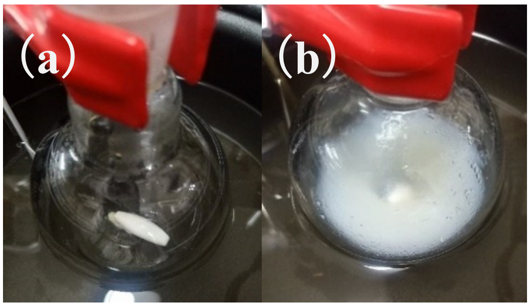

Fig. S1 Synthesis of Zr-tannin, (a) Before adding $ZrCl_4$, (b) After adding $ZrCl_4$.

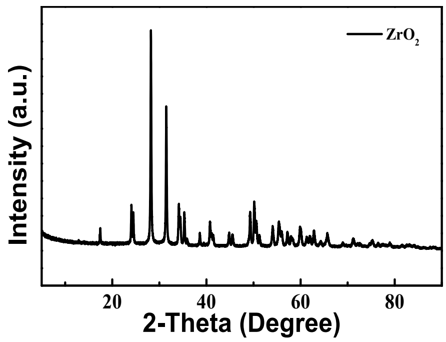

Fig. S2 XRD pattern of ZrO_2.

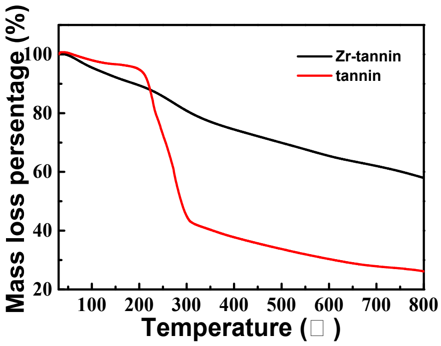

Fig. S3 TG curves of Zr-tannin and tannin.

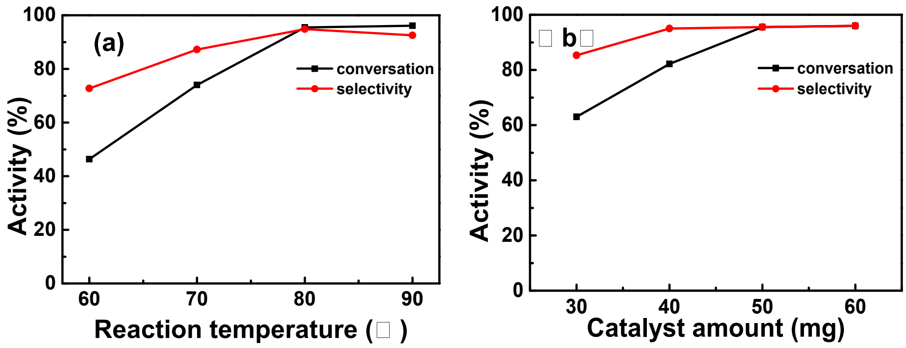

Fig. S4 (a) Effect of temperature on furfural conversion and furfuryl alcohol over Zr-tannin. The main by-product is furfural dissopropyl acetal (FDIA) and (isopropoxymethyl) furan (IPMA), (b) Effect of catalyst amounts. Reaction conditions: furfural: 1 mmol; 2-PrOH :10 mL; reaction temperature: 80 °C; reaction time: 3 h.

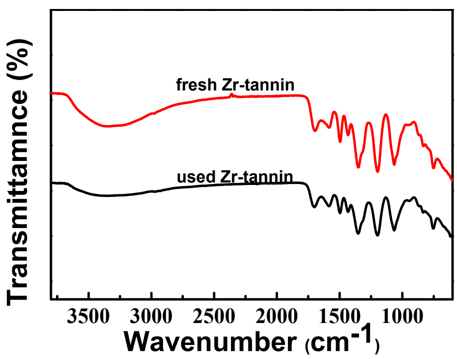

Fig. S5 FT-IR spectra of fresh Zr-tannin and used Zr-tannin.

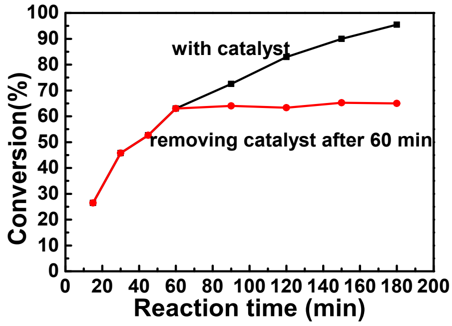

Fig. S6 Stability of Zr-tannin, the solid catalyst was removed after 1h.

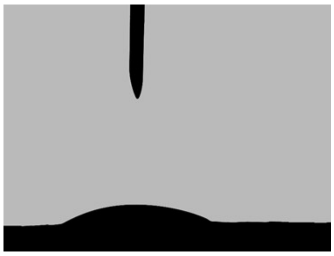

Fig. S7 Contact angle (CA) of a water droplet on the surface of Zr-tannin.

Table S1 Transfer hydrogenation of furfural to furfuryl alcohol with different catalysts

Entry	Catalyst	T (°C)	Time (h)	Con. (%)	FA sel. (%)	TOF (h^{-1})	Refer
1	FDCA-Hf	100	2	98	97	3.0	1
2	Mn-NCA-700	160	1	98	85	2.5	2
3	Fe-L1/C-800	120	6	51.5	85.4	1.5	3
4	NiO(P)-300	120	1	70.2	96.7	-	4
5	Zr-PW	120	1	99.7	98.9	-	5
6	PhP-Zr	120	2	86.8	89.4	-	6
7	Zr-LS	80	3	97	97	1.4	7
8	Zr-HAs	50	15	97	99	0.1	8
9	Zr-PN	100	15	93	97	0.4	9
10	Zr-RSL	90	6	93.4	86.7	1	10
11	Zr-PhyA	100	2	98	100	0.8	11
12	Zr-tannin	80	3	96.2	95	1.4	Present work

References

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