

Supplementary Information

Facile synthesis of furfuryl ethyl ether in high yield via reductive etherification of furfural in ethanol over Pd/C under mild conditions

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List of ESI

Table S1 Catalytic hydrogenation of furfuryl ethyl ether (FEE) and in the presence of 20 μ L of furfural (FF) or furfuryl alcohol (FA) over 0.7Pd/C.

Table S2 Catalytic performance of 0.7Pd/C in reductive etherification of furfural (FF) in ethanol/(100 μ L)water, methanol, and propanol. Reaction conditions: 10 mL of 0.24 M furfural (FF) solution; 60 $^{\circ}$ C; 0.3 MPa H_2 ; 100 mg catalyst; 2 h.

Figure S1. Mass spectrum of furfuryl ethyl ether, tetrahydrofurfuryl ethyl ether, 2-(diethoxymethyl)furan, and 2-(diethoxymethyl) tetrahydrofuran.

Table S1 Catalytic hydrogenation of furfuryl ethyl ether (FEE) and in the presence of 20 μ L of furfural (FF) or furfuryl alcohol (FA) over 0.7Pd/C.^a

Reactant	Conv.(FEE) %	Sel.%	
		TFEE ^b	MTF ^c
200 μ L FEE	100	75	25
200 μ L FEE+20 μ L FF	100	88	12
200 μ L FEE+20 μ L FA	100	78	22

a. Reaction conditions: 10 mL ethanol; 60 °C; 0.3 MPa H₂; 100 mg catalyst; 2 h.

b. TFEE: Tetrahydrofurfuryl ethyl ether.

c. MTF: 2-methyl tetrahydrofuran.

Table S2 Catalytic performance of 0.7Pd/C in reductive etherification of furfural (FF) in ethanol/(100 μ L)water, methanol, and propanol. Reaction conditions: 10 mL of 0.24 M furfural (FF) solution; 60 °C; 0.3 MPa H₂; 100 mg catalyst; 2 h. ^a

Solvent	Conv. %	Sel.%					
		Ether	DOF	FA	TFA	MTF	TFF
10 ml Ethanol +100 μ L water	100	7(FEE)	-	65	15	4	5
10 mL Methanol	100	18(FME)	-	34	27	11	10
10 mL 1-Propanol	83	49(FPE)	17	31	3	-	-

a. Abbreviations of some typical products:

FEE: Furfuryl ethyl ether

FME: Furfuryl methyl ether

FPE: Furfuryl propyl ether

DOF: 2-(dialkoxymethyl)furan

FA: Furfuryl alcohol

TFA: Tetrahydrofurfurylalcohol

TFEE: Tetrahydrofurfuryl ethyl ether

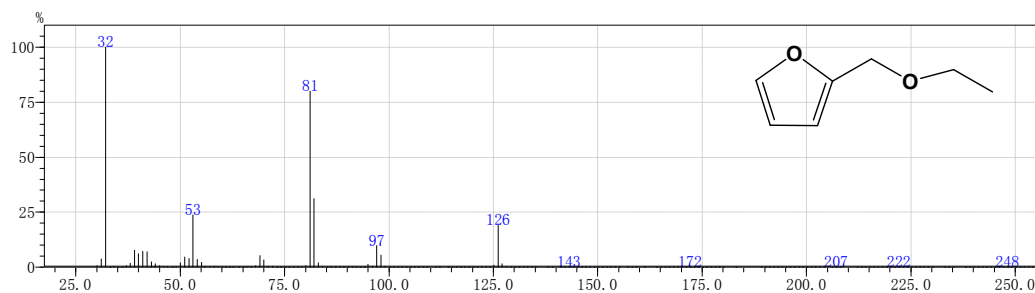
DOTF: 2-(dialkoxymethyl) tetrahydrofuran

MTF: 2-methyl tetrahydrofuran

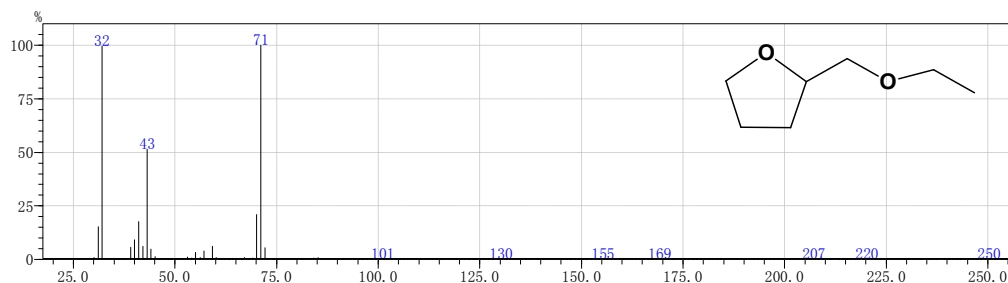
TFF: Tetrahydrofurfural

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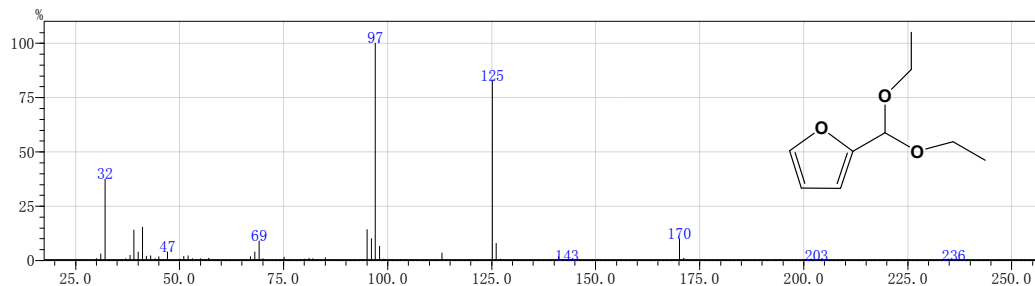
Furfuryl ethyl ether



Tetrahydrofurfuryl ethyl ether



2-(diethoxymethyl)furan



2-(diethoxymethyl) tetrahydrofuran

